

Mark Scheme Mock Paper

GCSE

GCSE in Mathematics Specification A
Higher Tier

Paper 1 (Non-Calculator)

General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear.

Comprehension and meaning is clear by using correct notation and labelling conventions.

ii) select and use a form and style of writing appropriate to purpose and to complex subject matter.

Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

iii) organise information clearly and coherently, using specialist vocabulary when appropriate.

The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

Guidance on the use of codes within this mark scheme

M1 - method mark

A1 - accuracy mark

B1 - working mark

C1 - communication mark

QWC - quality of written communication

oe - or equivalent

cao - correct answer only

ft - follow through

sc - special case

Specification A: Paper 1 Higher Tier

1MA0/1H					
Question		Working	Answer	Mark	Additional Guidance
1.		$32 \div 80 \times 100$	40	2	M1 for $32 \div 80 \times 100$ oe A1 cao
Total for Question 1: 2 marks					
2.		300×0.7	210	2	M1 for 300×0.7 A1 cao
Total for Question 2: 2 marks					
3.	(a)		$2 \times 2 \times 2 \times 3 \times 5$	2	M1 for correct method seen A1 cao
	(b)		30	1	B1 cao
Total for Question 3: 3 marks					
4.	(a)	$24 \div 12 = 2$ 2×180	360	2	M1 for $24 \div 12 (= 2)$ A1 cao
FE	(b)	$18 \div 12 (=1.5)$ 1.5×200	300	2	M1 for $18 \div 12 (=1.5)$ A1 cao
Total for Question 4: 4 marks					
5.			Shape enlarged $\times 3$ in correct position	3	B3 shape enlarged $\times 3$ in correct position (B2 shape enlarged $\times 3$ but in wrong position or shape enlarged by a different scale factor correctly) (B1 shape enlarged by a different scale factor and in wrong position)
Total for Question 5: 3 marks					
6.	(a)		20	2	M1 for substitution into formula A1 cao
	(b)		m^{13}	1	B1 cao
	(c)		1	1	B1 cao
	(d)		$4y^3$	2	B2 for $4y^3$ (B1 for ay^3 or $4y^n$ or $16^{1/2}(y^3)^{1/2}$)
Total for Question 6: 6 marks					
7.			Question and response boxes	2	B1 for suitable question B1 for response boxes
FE					
Total for Question 7: 2 marks					

1MA0/1H				
Question	Working	Answer	Mark	Additional Guidance
8.	(i)	0.39	3	B1 cao
	(ii)	0.41		M1 for $1 - (0.2 + 0.16 + 0.23)$ A1 cao
Total for Question 8: 3 marks				
9.		49	4	M1 for $100 - 38 (=62)$ M1 for $23 - 7 (-16)$ M1 for " 62 " - 18 - " 16 " A1 cao <i>NB</i> : working may be in a table or diagram
Total for Question 9: 4 marks				
10. FE		2	4	M1 for attempt to find LCM of any 2 of 12, 8 and 9 M1 for attempt to find LCM of 8, 9 and 12 A1 for 72 A1 for 2
Total for Question 10: 4 marks				
11. FE	$15000 \div 100 \times 40 (=6000)$ $15000 - "6000" (=9000)$	3000	4	M1 for $15000 - 15000 \div 100 \times 40$ oe $(=6000)$ M1 for " 9000 " $\div (3 + 1 + 2) (=1500)$ M1 for " 1500 " $\times 2$ A1 cao
Total for Question 11: 4 marks				

1MA0/1H				
Question	Working	Answer	Mark	Additional Guidance
12.	(a)	$12x + 3y$	2	M1 for $3 \times 4x + 3 \times y$ or $12x$ or $3y$ A1 cao
	(b)	$5p^2 - 15p$	1	B1 cao
	(c)	$y^2 + 5y - 24$	2	M1 for all 4 terms correct with or without signs or 3 out of no more than four terms correct with signs or $y(y - 3) + 8(y - 3)$ or $y(y + 8) - 3(y + 8)$ A1 cao
	(d)	$4t^2 - 12t + 9$	2	M1 for all 4 terms correct with or without signs or 3 out of no more than four terms correct with signs or $2t(2t - 3) - 3(2t - 3)$ A1 cao
Total for Question 12: 7 marks				
13.		$m = \frac{(p - h)}{6}$	2	M1 for $p - h = 6m$ A1
Total for Question 13: 2 marks				
14. FE		Region shaded	4	M1 for line parallel to AB , 2 cm ± 2 mm from AB M1 for circle, centre T , radius 3 cm ± 2 mm M1 for bisector of angle $DCB \pm 2^\circ$ A1 for correct region shaded within guidelines
Total for Question 14: 4 marks				
15.	$2x + 1 + 3x - 2 + 3x + 1 + 2x = 38$ $10x - 2 = 38$ $x = 4$ 7; 8; 13 $\frac{1}{2} \times (7 + 13) \times 10$	80	5	M1 for $2x + 1 + 3x - 2 + 3x + 1 + 2x = 38$ M1 for correct method to solve linear equation A1 for $x = 4$ M1 for substitution of $x = 4$ into any expression for side A1 cao
Total for Question 15: 5 marks				

1MA0/1H				
Question	Working	Answer	Mark	Additional Guidance
16.	180 - (360 ÷ 5) oe (=108) 360 - "60" - 2 × "108"	84	4	B1 for 60° seen M1 for 180 - (360 ÷ 5) oe (=108) M1 for 360 - "60" - 2 × "108" A1 cao
				Total for Question 16: 4 marks
17. QWC FE	4000 × 1.03 ²	Bank B	5	M2 for 4000 × 1.03 ² oe (M1 for 1.03 × 4000 oe or 120 seen) M1 for 3.2 × 4000 ÷ 100 oe A1 for 256 and 243.60 C1 for clear working conclusion following on from candidate's working QWC : Working must be clearly laid out and conclusion must link to working
				Total for Question 17: 5 marks

1MA0/1H					
Question	Working	Answer	Mark	Additional Guidance	
18.	(a)	$6 \div 4 = 1.5$ 1.5×9	13.5	2	M1 for $6 \div 4 (=1.5)$ or $2 \div 3$ A1 cao
	(b)	$10.5 \div 1.5$	7	2	M1 for $10.5 \div 1.5$ oe A1 cao
Total for Question 18: 4 marks					
19.			$x = 2,$ $y = -1.5$	4	M1 for correct process to eliminate either x or y (condone one arithmetic error) A1 for either $x = 2$ or $y = -1.5$ M1 (dep on 1 st M1) for correct substitution of their found variable A1 cao for both $x = 2$ and $y = -1.5$
Total for Question 19: 4 marks					
20.	(a)		Points plotted and cf graph drawn	2	B1 ft for at least 5 of 6 points plotted correctly $\pm \frac{1}{2}$ sq at end of B1 ft (dep on previous B1) for points joined by curve or line segments provided no gradient is negative - ignore any part of graph outside range of their points (SC B1 if 5 or 6 pts plotted not at end but consistent within each interval and joined)
FE					
	(b)		Box plot drawn	3	B1 for median drawn correctly (ft from graph) B1 for UQ and LQ drawn correctly (ft from graph) B1 for whiskers correct
	(c)		Comparison	2	B2 ft for any comparison of spread in context (B1 ft for any comparison not in context)
Total for Question 20: 7 marks					

1MA0/1H				
Question	Working	Answer	Mark	Additional Guidance
21.	$(14 - 2)/2 (=6)$ $"6" \times 3 (=18)$ $"18" + 1$	19	3	M1 for $(14 - 2)/2 (=6)$ M1 for $"6" \times 3$ A1 cao or M1 for $(k - 1)/12 = 3/2$ M1 for $2(k - 1) = 12 \times 3$ A1 cao
				Total for Question 21: 3 marks
22.		96	4	M1 for Angle $ABC = 0.5 \times 168 (= 84)$ M1 for Angle $ADC = 180 - 0.5 \times 168$ A1 cao C1 for Angle at centre is twice angle at circumference and Opposite angles of a cyclic quadrilateral sum to 180° or M1 for reflex angle $AOC = 360 - 168 (= 192)$ M1 for 0.5×192 A1 cao C1 for Angle at centre is twice angle at circumference and angles at a point add up to 360°
				Total for Question 22: 4 marks

1MA0/1H				
Question	Working	Answer	Mark	Additional Guidance
23.		$\frac{52}{72}$	4	<p>B1 for $\frac{a}{9} \times \frac{b}{8}$</p> <p>M1 for $\frac{3}{9} \times \frac{4}{8}$ or $\frac{3}{9} \times \frac{2}{8}$ or $\frac{4}{9} \times \frac{3}{8}$ or $\frac{4}{9} \times \frac{2}{8}$ or $\frac{2}{9} \times \frac{4}{8}$ or $\frac{2}{9} \times \frac{3}{8}$</p> <p>M1 for $\frac{3}{9} \times \frac{4}{8} + \frac{3}{9} \times \frac{2}{8} + \frac{4}{9} \times \frac{3}{8} + \frac{4}{9} \times \frac{2}{8} + \frac{2}{9} \times \frac{4}{8} + \frac{2}{9} \times \frac{3}{8}$</p> <p>A1 for $\frac{52}{72}$ oe</p> <p>or</p> <p>B1 for $\frac{a}{9} \times \frac{b}{8}$</p> <p>M1 for $\frac{4}{9} \times \frac{3}{8}$ or $\frac{3}{9} \times \frac{2}{8}$ or $\frac{2}{9} \times \frac{1}{8}$</p> <p>M1 for $1 - (\frac{4}{9} \times \frac{3}{8} + \frac{3}{9} \times \frac{2}{8} + \frac{2}{9} \times \frac{1}{8})$</p> <p>C1 for $\frac{52}{72}$ oe</p>
				Total for Question 23: 4 marks
24.		5, - 0.5	5	<p>M1 for common denominator on LHS or clearing fractions</p> <p>M1 for multiplying out brackets</p> <p>A1 for $2x^2 - 9x + 5 = 0$</p> <p>M1 for $(2x \pm 1)(x \pm 5)$ or substitution into quadratic formula</p> <p>A1 for 5 and - 0.5</p>
				Total for Question 24: 5 marks

1MA0/1H					
Question		Working	Answer	Mark	Additional Guidance
25.	(i)		$2\mathbf{b} + \mathbf{a}$	2	M1 for $\overrightarrow{PR} = \overrightarrow{PQ} + \overrightarrow{QR}$ oe A1 cao
	(ii)		$\frac{1}{2}\mathbf{b} + \mathbf{a}$	3	M1 for $\frac{3}{4}\overrightarrow{QR}$ oe M1 for $\overrightarrow{SX} = \overrightarrow{SP} + \overrightarrow{PQ} + \frac{3}{4}\overrightarrow{QR}$ oe A1 for $\frac{1}{2}\mathbf{b} + \mathbf{a}$ oe
					Total for Question 25: 5 marks

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