2009 Mathematics

Intermediate 1 Units 1, 2 & 3 Paper 1

Finalised Marking Instructions

Part One: General Marking Principles for Mathematics Intermediate 1 Units 1, 2 & 3 Paper 1

This information is provided to help you understand the general principles you must apply when marking candidate responses to questions in this Paper. These principles must be read in conjunction with the specific Marking Instructions for each question.

1.	Marks for each candidate response must <u>always</u> be assigned in line with these general marking principles and the specific Marking Instructions for the relevant question. If a specific candidate response does not seem to be covered by either the principles or detailed Marking Instructions, and you are uncertain how to assess it, you must seek guidance from your Team Leader/Principal Assessor. You can do this by posting a question on the Marking Team forum or by e-mailing/phoning the emarker Helpline. Alternatively, you can refer the issue directly to your Team Leader by checking the 'Referral' box on the marking screen.

2.	Marking should always be positive, i.e. marks should be awarded for what is correct and not deducted for errors or omissions.

3.	Award one mark for each 'bullet' point shown in the Marking Instructions.

4.	Working subsequent to an error must be followed through with the possibility of awarding all remaining marks for the subsequent working, provided the question has not been simplified as a result of the error. In particular, the answer to one part of a question, even if incorrect, must be accepted as a basis for subsequent dependent parts of the question. Full marks in the dependent part(s) may be awarded provided the question has not been simplified.

5.	Solutions which seem unlikely to include anything of relevance must nevertheless be followed through. Candidates still have the opportunity of gaining one mark or more provided the solution satisfies the criteria for the marks.

6.	The following should not be penalised:

    • working subsequent to a correct answer (unless it provides firm evidence that the requirements of the question have not been met)
    • omission or misuse of units (unless marks have been specifically allocated for the purpose in the Marking Instructions)
    • bad form, eg $\sin x^\circ = 0\cdot5 = 30°$
    • legitimate variation in numerical values/algebraic expressions.

7.	Full credit should only be given where the solution contains appropriate working. Where the correct answer may be obtained by inspection or mentally, credit may be given, but reference to this will be made in the Marking Instructions.

8.	In general only give credit for answers if working is shown. A wrong answer without working receives no credit unless specifically mentioned in the Marking Instructions. The rubric on page one of the question paper states that 'full credit will be given only where the solution contains appropriate working'.

9.	Sometimes the method to be used in a particular question is explicitly stated; no credit should be given where a candidate obtains the correct answer by an alternative method.

10.	Where the method to be used in a particular question is not explicitly stated, full credit must be given for alternative methods which produce the correct answer.

11. Do not penalise the same error twice in the same question.

12. Do not penalise a transcription error unless the question has been simplified as a result.

13. Where a solution has been scored out and not replaced, then provided the solution is legible, marks should be awarded in line with the Marking Instructions for that question.

14. Where more than one solution is given, mark them all and award the least mark.

15. The symbols ✓ and ✗ are used in the Marking Instructions to give guidance regarding the awarding of marks for specific candidate responses to some questions, eg 'award 2/4 ✓✗✗✓' indicates that the 1st & 4th marks should be awarded but the 2nd & 3rd marks should not.

Part Two: Mathematics Intermediate 1: Paper 1, Units 1, 2 and 3

Question			Expected Answer/s	Max Mark	Additional Guidance
1	**a**		**Ans: 33·05** •[1] calculate $28·7 + 4·35$: $33·05$	**1**	
1	**b**		**Ans: 0·27** •[1] calculate $1·89 ÷ 7$: $0·27$	**1**	

1	**c**		**Ans: 26**
			
			•[1] correct method: $6×4 + 6×\frac{1}{3}$
			
			•[2] calculate $6 × 4\frac{1}{3}$: 26
				2	1. Correct answer without working award 2/2
					
					2. Alternative strategy
					  •[1] $6 × \frac{13}{3}$
					  •[2] $\frac{78}{3}$
					
					3. Answers acceptable for full or partial credit (no working necessary)
					  (a) $\frac{78}{3}$ award 2/2
					  (b) $24\frac{6}{3}$ award 1/2 ✓✗
					
					4. Answer acceptable for partial credit (working must be shown)
					  $6 × 4·33(…) = 25·98$ award 1/2
					
					5. (a) $6×4 + 6×\frac{1}{3} → 24\frac{6}{18}$ award 1/2 ✓✗
					  (b) $24\frac{6}{18}$ with no working award 0/2
					
					6. Do not accept
					  (a) $6 × 4·3 = 25·8$ award 0/2
					  (b) 78 award 0/2

Question			Expected Answer/s	Max Mark	Additional Guidance
2			**Ans: £1248** $\bullet^1$ know to multiply 4·99 by 200 and then add 250 : $4·99 \times 200 + 250$ $\bullet^2$ multiply and add correctly: 1248	**2**	1. Correct answer without working award 2/2 2. Answers acceptable for partial credit (no working necessary) (a) 998 [4·99 × 200] award 1/2 (b) 2245·5(0) [(250 + 200) × 4·99] award 1/2 ✗✓ 3. 250 + (200 × 4·99) **alone** is insufficient evidence for awarding the 1st mark.
3	**a**		**Ans: − 4** $\bullet^1$ calculate $9 + (-13)$: -4	**1**	
3	**b**		**Ans: 7** $\bullet^1$ calculate $-56 \div (-8)$: 7	**1**	1. Accept $56 \div 8 = 7$
4			**Ans: £275** $\bullet^1$ calculate deposit: 25% of 260 = 65 $\bullet^2$ calculate instalments: $15 \times 14 = 210$ $\bullet^3$ calculate total HP price: $65 + 210 = 275$	**3**	1. Correct answer without working award 3/3 2. The 3rd mark is only available for correctly adding **calculated** deposit to **calculated** instalments eg (a) 65 + (14×10×5) = 65 + 700 = 765 award 2/3 ✓✗✓ (b) 65 + 14 = 79 award 1/3 ✓✗✗

Question			Expected Answer/s	Max Mark	Additional Guidance
5	**a**		**Ans:** <table><tr><td>x</td><td>− 4</td><td>0</td><td>3</td><td>9</td></tr><tr><td>y</td><td>**9**</td><td>**5**</td><td>2</td><td>**− 4**</td></tr></table> $\bullet^1$ calculate y when $x = -4$: y = 9 $\bullet^2$ calculate y when $x = 0$ and 9: y = 5 and y = −4	2	
5	**b**		**Ans: straight line graph of** $y = 5 - x$ $\bullet^1$ correctly plot all three points from the table $\bullet^2$ draw straight line through the four points shown in the table (but see note 2)	2	1. If the line $y = 5 - x$ is drawn (even if this is not consistent with the points in the table) award 2/2 [minimum acceptable line: must extend to (−1,6) and (6,−1)] 2. Where the four points in the table satisfy $y = x - 1$, the points are plotted and a line is drawn through them, award 1/2 3. Where the four points plotted are consistent with the table and are not collinear, the 2nd mark is unavailable 4. Where a line other than $y = 5 - x$ is drawn and (y,x) is consistently plotted, answer should be followed through with the possibility of awarding the 2nd mark
6			**Ans: 2·8** $\bullet^1$ know that PTR means $70 \times 0.5 \times 8$ $\bullet^2$ know that PTR/100 means PTR ÷ 100: $(70 \times 0.5 \times 8) \div 100$ $\bullet^3$ multiply and divide correctly: $280 \div 100 = 2.8(0)$	3	1. Correct answer without working award 3/3 2. $(70+0.5+8) \div 100 = 78.5 \div 100 = 0.785$ [no working necessary] award 1/3 ✗✓✗ 3. Acceptable evidence for award of 2nd mark eg $\frac{280}{100} = 28$, 0·28 award 2/3 ✓✓✗

Question			Expected Answer/s	Max Mark	Additional Guidance
7	a		**Ans: 7** •[1] find mode: 7	1	
7	b		**Ans: 6** •[1] find range: 6	1	

7	c		**Ans: 7·5**
			
			•[1] complete table:
			
			   36
			   40
			   <u>11</u>
			   <u>300</u>
			
			•[2] know to divide Σfx by 40: $300 \div 40$
			
			•[3] divide **$\sum fx$** correctly: $300 \div 40 = 7 \cdot 5$
				3	1. Award of 1st mark: 36, 40, 11 and 300 need not appear in table but must be shown in working
					
					2.
					<table><tr><td>**Answer**</td><td>**With evidence for 1st mark**</td><td>**Without evidence for 1st mark**</td></tr><tr><td>7·5</td><td>3/3 ✓✓✓</td><td>2/3 ✗✓✓</td></tr></table>
					3. 2nd mark may only be awarded for attempting $\Sigma fx \div 40$
					
					4. 3rd mark may only be awarded where answer to **division of $\sum fx$** is given to one or more decimal places (accept rounding or truncation).
					Do not award 3rd mark where working is eased.
					<table><tr><td>**Answer**</td><td>**With evidence for 1st mark**</td><td>**Without evidence for 1st mark**</td></tr><tr><td>$300 \div 7 = 42\cdot9$
					or 42·8…</td><td>2/3 ✓✗✓</td><td>1/3 ✗✗✓</td></tr><tr><td>$300 \div 6 = 50$</td><td>1/3 ✓✗✗</td><td>0/3 ✗✗✗</td></tr></table>

Question		Expected Answer/s	Max Mark	Additional Guidance
8		**Ans:** $x = 7$	**3**	
		$\bullet^1$ start to collect like terms: $5x$ or 35		1. For answers without valid working eg
				(i) $5x + 11 = 46 \rightarrow 35 \div 5 \rightarrow x = 7$ award 2/3 ✓✗✓
		$\bullet^2$ collect like terms **and** equate: $5x = 35$		(ii) $x = 7$ without working award 1/3 ✗✗✓
				(iii) $35 \div 5 = 7$ award 1/3 ✓✗✗
		$\bullet^3$ solve equation for x: $x = 7$		(iv) $4 \times 7 + 11 = 46 - 7 \rightarrow x = 7$ award 1/3 ✗✗✓
				2. For the award of the 3rd mark an answer of the form '$x =$' is required.
				3. Answers acceptable for partial credit (valid working must be shown)
				(i) $5x = 35 \rightarrow 7$ ✓✓✗ ⎫
				(ii) $5x = 57 \rightarrow x = 11 \cdot 4$ ✓✗✓ ⎬ award 2/3
				(iii) $3x = 35 \rightarrow x = 11 \cdot 7$ or $11 \cdot 6$ ...✓✗✓ ⎭ (disregard incorrect rounding)
				(iv) $5x = 57 \rightarrow x = 11r2$ ✓✗✗ ⎫
				(v) $3x = 35 \rightarrow x = 11r2$ ✓✗✗ ⎬ award 1/3
				(vi) $3x = 57 \rightarrow x = 19$ ✗✗✓ ⎭

Question			Expected Answer/s	Max Mark	Additional Guidance
9	a		Ans: − 7 •¹ find correct number of points: $4 \times 2 - 15 = -7$	1	
9	b		Ans: | Correct answer +2 points	No answer 0 points	Wrong answer −1 point
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10	0	10
9	3	8
8	6	6
6	12	2
5	15	0	 •¹ complete one row correctly •² complete another two rows correctly •³ complete final two rows correctly	3	1. Assume blank cell = 0.

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TOTAL MARKS FOR PAPER 1

30

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