



2013 Mathematics

Intermediate 1 Units 1,2 & Applications Paper 1

Finalised Marking Instructions

© Scottish Qualifications Authority 2013

The information in this publication may be reproduced to support SQA qualifications only on a non-commercial basis. If it is to be used for any other purposes written permission must be obtained from SQA's NQ Assessment team.

Where the publication includes materials from sources other than SQA (secondary copyright), this material should only be reproduced for the purposes of examination or assessment. If it needs to be reproduced for any other purpose it is the centre's responsibility to obtain the necessary copyright clearance. SQA's NQ Assessment team may be able to direct you to the secondary sources.

These Marking Instructions have been prepared by Examination Teams for use by SQA Appointed Markers when marking External Course Assessments. This publication must not be reproduced for commercial or trade purposes.

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 always 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. You can ask for support within Scoris Assessor by using the messaging system or by raising an exception.
Instructions on how to use the message system and raise an exception are on SQA Academy: e-marking 2013 training course.
2. Marking should always be positive ie, 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 not 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 not 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 $\sin x^\circ = 0.5 = 30^\circ$
 - 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 Units 1, 2 & Applications

Paper 1

Question		Expected Answer/s	Max Mark	Additional Guidance
1	a	<p>Ans: 22.53</p> <p>•¹ calculate $16.7 + 5.83$: 22.53</p>	1	
1	b	<p>Ans: 19.17</p> <p>•¹ calculate 9×2.13: 19.17</p>	1	
1	c	<p>Ans: 238</p> <p>•¹ calculate 70% of 340: 238</p>	1	
2	a	<p>Ans: line of best fit drawn</p> <p>•¹ draw line of best fit</p>	1	1. Accept straight lines with $1 \leq \text{gradient} \leq 2$ and $ (\text{points above line}) - (\text{points below line}) \leq 2$
2	b	<p>Ans: consistent with line of best fit</p> <p>•¹ consistent with line of best fit</p>	1	1. You may have to extend candidate's line to check answer
3		<p>Ans: £276.42</p> <p>•^{1,2} find gross pay: 339.70 [award 1 for knowing how to find overtime amount: $1.5 \times 8.60 \times 3$ or equivalent]</p> <p>•³ find net pay: $339.70 - 63.28 = 276.42$</p>	3	<p>1. If the payslip is incomplete then marks may be awarded for each correct answer appearing elsewhere on the page.</p> <p>2. Award of the first two marks: (a) For gross pay $\neq 339.70$ award one mark only where there is evidence of $1.5 \times 8.60 \times 3$ or equivalent (b) no marks are available for simply adding basic pay + overtime pay</p> <p>3. Some common answers (no working necessary) (a) 38.70 [$1.5 \times 8.60 \times 3$] award 1/3 (b) 12.90 [1.5×8.60] award 0/3</p>

Question	Expected Answer/s	Max Mark	Additional Guidance
4	<p>Ans: £94</p> <ul style="list-style-type: none"> •¹ subtract $700 - 136$ correctly: 564 •² know to divide by 6: $564 \div 6$ •³ divide correctly: $564 \div 6 = 94$ 	3	<ol style="list-style-type: none"> 1. Correct answer without working award 3/3 2. Some common answers [working must be shown] <ul style="list-style-type: none"> (a) 139.33 [$(700 + 136) \div 6$] award 2/3 $\times\checkmark\checkmark$ (b) 116.67 or 116.66 [$700 \div 6$] award 1/3 $\times\times\checkmark$ (c) 22.67 or 22.66 [$136 \div 6$] award 1/3 $\times\times\checkmark$ (d) 3384 [564×6] award 1/3 $\checkmark\times\times$ (e) 1516 [$700 + 136 \times 6$] award 0/3 3. 3rd mark is only available for correct division rounded or truncated to nearest penny where appropriate
5	<p>Ans: 251.2 cm^3</p> <ul style="list-style-type: none"> •¹ know how to find curved surface area: $2\pi rh$ or πdh •² substitute 3.14, correct radius (or diameter) and correct height into formula: $2 \times 3.14 \times 8 \times 5$ or $3.14 \times 16 \times 5$ •³ carry out all calculations correctly (must involve 3.14): 251.2 	3	<ol style="list-style-type: none"> 1. Correct answer without working award 3/3 2. If an incorrect formula is used then the 2nd mark is only available for correctly substituting 3.14, radius (or diameter) and height into a previously stated formula e.g. <ul style="list-style-type: none"> (a) $\pi rh = 3.14 \times 8 \times 5 = 125.6$ $\times\checkmark\checkmark$ (b) $3.14 \times 8 \times 5 = 125.6$ $\times\times\checkmark$ (c) $\pi r^2 = 3.14 \times 8^2 = 200.96$ $\times\times\checkmark$ [no formula stated] (d) $\pi d = 3.14 \times 16 = 50.24$ $\times\times\checkmark$ [no height in formula] 3. The 3rd mark is only available for calculations of equivalent difficulty to the intended one e.g. <ul style="list-style-type: none"> (a) $\pi r = 3.14 \times 8 = 25.12$ $\times\times\times$ [calculation eased] (b) $3.14 \times 8^2 + 16 \times 5 = 200.96 + 180 = 380.96$ $\times\times\times$ [not all calculations correct]

Question		Expected Answer/s	Max Mark	Additional Guidance
6	a	<p>Ans: $\begin{array}{r} 168 \\ 54 \\ \underline{50} \\ 385 \end{array}$</p> <p>•¹ complete table $\begin{array}{r} 168 \\ 54 \\ \underline{50} \\ 385 \end{array}$</p>	1	
6	b	<p>Ans: 7·7</p> <p>•¹ know to divide $\sum fx$ by 50: $385 \div 50$</p> <p>•² correctly divide $\sum fx$ by 50: $385 \div 50 = 7\cdot7$</p>	2	<ol style="list-style-type: none"> 1. Correct answer without working subsequent to part (a) award 2/2 2. 1st mark may only be awarded for attempting $\sum fx \div 50$ 3. Award 0/2 for e.g. $385 \div 6 = 64$ or $64\cdot2$ or $64\cdot1(6\dots)$ 4. Accept $\sum fx \div 10 \times 5$ or $\sum fx \div 5 \times 10$ as evidence of knowing to divide $\sum fx$ by 50 5. For $385 \div 5 = 77$ award 0/2
7	a	<p>Ans: $\frac{2}{15}$</p> <p>•¹ find probability: $\frac{2}{15}$</p>	1	<ol style="list-style-type: none"> 1. Accept 2:15, 2 out of 15, 2 in 15, 2-15, 0·13(3...), 13(·3....)%
7	b	<p>Ans: $\frac{7}{13}$</p> <p>•¹ correct numerator or denominator: $\frac{7}{\quad}$ or $\frac{\quad}{13}$</p> <p>•² find probability: $\frac{7}{13}$</p>	2	<ol style="list-style-type: none"> 1. Correct answer without working award 2/2 2. Accept 7:13, 7 out of 13, 7 in 13, 7-13, 0·53(8...), 0·54, 53(·8....)%, 54% 3. For (a) = $\frac{15}{2}$ followed by (b) = $\frac{13}{7}$ award 0/1 for (a) and 2/2 for (b)

Question	Expected Answer/s	Max Mark	Additional Guidance
8	<p>Ans: 0250 or 2.50am</p> <p><u>Method 1</u></p> <ul style="list-style-type: none"> •¹ correct method $2125 - 1650 + 2215$ •² calculate time interval correctly: $2125 - 1650 = 4\text{h}35\text{m}$ •³ add time correctly $2215 + 4\text{h}35\text{m} = 0250$ <p><u>Method 2</u></p> <ul style="list-style-type: none"> •¹ correct method $2215 - 1650 + 2125$ •² calculate time interval correctly: $2215 - 1650 = 5\text{h}25\text{m}$ •³ add time correctly: $2125 + 5\text{h}25\text{m} = 0250$ 	3	<p>1. Correct answer without working award 3/3</p> <p>2. Some answers (no working necessary) (a) 250, 2.50 award 3/3 (b) 2650, 2.50pm, 1450 award 2/3 ✓✓x</p> <p>3. The 1st mark may only be awarded where there is evidence of a complete correct method</p> <p>e.g. <u>Method 1</u> (a) 4h35m and no subsequent working award 1/3 x✓x (b) 4h35m and subsequent working (i) $2215 + 4\text{h}35\text{m} =$ incorrect answer award 2/3 ✓✓x (ii) $2125 + 4\text{h}35\text{m} = 0200$ award 2/3 x✓✓</p> <p>e.g. <u>Method 2</u> (c) 5h25m and no subsequent working award 1/3 x✓x (d) 5h25m and subsequent working (i) $2125 + 5\text{h}25\text{m} =$ incorrect answer award 2/3 ✓✓x (ii) $2215 + 5\text{h}25\text{m} = 0340$ award 2/3 x✓✓</p> <p>4. The 2nd mark may be awarded for e.g. <u>Method 1</u> 10m → 4h → 25m <u>Method 2</u> 10m → 5h → 15m</p>

Question		Expected Answer/s	Max Mark	Additional Guidance
9		<p>Ans: -50</p> <ul style="list-style-type: none"> •¹ know to multiply $2 \times (-10) \times 4$: $2 \times (-10) \times 4$ •² multiply three integers correctly (see note 2): $2 \times (-10) \times 4 = -80$ •³ subtract -30 correctly: $-80 - (-30) = -50$ 	3	<ol style="list-style-type: none"> 1. Correct answer without working award 2/3 2. 2nd mark is only available for correctly multiplying at least three of the numbers 2, -10, 4 and -30. 3. Some common answers <ul style="list-style-type: none"> (a) -80 award 2/3 ✓✓× (b) $-80 - 30 = -50$ award 2/3 ✓✓× (c) $-80 - 30 = -110$ award 2/3 ✓✓× (d) $2 \times (-10) \times 4 = 80 \rightarrow 80 - (-30) = 110$ award 2/3 ✓×✓ (e) $2 \times 10 \times 4 = 80 \rightarrow 80 - (-30) = 110$ award 1/3 ××✓ (f) $2 \times (-10) + 2 \times 4 = -12$ award 0/3
10		<p>Ans: AU\$3160</p> <ul style="list-style-type: none"> •¹ know to multiply 1.58×2000: 1.58×2000 •² multiply correctly: $1.58 \times 2000 = 3160$ 	2	<ol style="list-style-type: none"> 1. Correct answer without working award 2/2 2. $2000 \div 1.58 = 1265.82$ award 1/2 ×✓
10	b	<p>Ans: £1 = AU\$1.55</p> <ul style="list-style-type: none"> •¹ know to divide $620 \div 400$: $620 \div 400$ •² divide correctly: $620 \div 400 = 1.55$ 	2	<ol style="list-style-type: none"> 1. Correct answer without working award 2/2 2. Do not accept $400 \times ? = 620$ alone, as evidence of knowing to divide $620 \div 400$ 3. Accept $620 \div 100 \times 4$ or $620 \div 4 \times 100$ as evidence of knowing to divide $620 \div 400$

TOTAL MARKS FOR PAPER 1
30

[END OF MARKING INSTRUCTIONS]