2012 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. 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 2012 training course: Section 4 - A guide to e-marking for markers: Scoris Assessor online marking training: Section 7 - Communications.

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° = 0·5 = 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: 2·71** • [1] calculate $8·31 - 5·6$: 2·71	**1**	
1	**b**		**Ans: 11·6** • [1] calculate $0·029 \times 400$: 11·6	**1**	
1	**c**		**Ans: 124** • [1] calculate $^2/_7$ of 434: 124	**1**	
2			**Ans: $^2/_5$** • [1] find probability: $^8/_{20}$ • [2] simplify fraction: $^2/_5$	**2**	1. Correct answer without working award 2/2 2. 2/3, 3/5 (no working necessary) award 1/2 ✗✓ 3. Final answer must be a fraction 8:20, 2:5, 8 out of 20, 2 out of 5, 8 in 20, 2 in 5, 8-20, 2-5, 0·4, 40% award 1/2 ✓✗
3			**Ans: $5·86 \times 10^{-5}$** • [1] correct coefficient: 5·86 • [2] consistent power of ten: $$5·86 \times 10^{-5}$$	**2**	1. Correct answer without working award 2/2 2. Some common answers (no working necessary) (a) 586×10^{-7} award 1/2 ✗✓ (b) $58·6 \times 10^{-6}$ award 1/2 ✗✓ (c) $5·86 \times 10^{5}$ award 1/2 ✓✗ (d) 586×10^{7} award 0/2

Question			Expected Answer/s	Max Mark	Additional Guidance
4			**Ans: £176** $\bullet^1$ know how to calculate commission: 30% of $(620 - 200)$ $\bullet^2$ calculate commission: 126 $\bullet^3$ calculate total pay: $126 + 50 = 176$	**3**	1. Correct answer without working award 3/3 2. The 2nd mark is available for correctly calculating 30% of any amount e.g. (a) 186(30% of 620) + 50 = 236 award 2/3 ✗✓✓ (b) 30% of 200 = 60 (×3 = 180) → 180 + 50 = 230 award 2/3 ✗✓✓ (c) 30% of 200 = 60 (×3 = 180) award 1/3 ✗✓✗ 3. The 3rd mark is only available for adding 50 to a previously calculated value; it is not available if there is invalid subsequent working e.g. (a) 30% of 420 + 50 + 420 = 596 award 2/3 ✓✓✗ (b) 620 + 50 = 670 award 0/3

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Question			Expected Answer/s	Max Mark	Additional Guidance
5	a		**Ans:** 	x	− 8	0	4	 	y	**−1**	**3**	**5**	 $\bullet^1$ calculate y when $x = -8$: -1 $\bullet^2$ calculate y when $x = 0$ **and** 4: 3 **and** 5	2	
5	b		**Ans: straight line graph of** $$y = 0{\cdot}5x + 3$$ $\bullet^1$ correctly plot all three points from the table $\bullet^2$ draw straight line through the three points shown in the table	2	1. If the line $y = 0{\cdot}5x + 3$ is drawn (even if this is not consistent with the points in the table) award 2/2 [minimum acceptable length: line joining $(-2,2)$ to $(2,4)$] 2. Where the three points plotted are consistent with the table and are not collinear, the 2nd mark is unavailable **[check gradients]** 3. Where (y,x) is consistently plotted, answer should be followed through with the possibility of awarding the 2nd mark

Question			Expected Answer/s	Max Mark	Additional Guidance
6	**a**		**Ans: 6** •^{1} find mode: 6	**1**	
6	**b**		**Ans: 4** •^{1} find range: $9 - 5 = 4$	**1**	

6	**c**		**Ans: 6·48**
			
			•^{1} complete table:
			$\begin{array}{r} 240 \\ \underline{63} \\ \underline{1296} \end{array}$
			
			•^{2} know to divide Σfx by 200: $1296 \div 200$
			
			•^{3} correctly divide Σfx by 200: $= 6\cdot48$
				3	1. Award of 1st mark: 240, 63 and 1296 need not appear in table but must be shown in working
					
					2. 2nd mark may only be awarded for attempting Σf$x \div 200$
					
					3. <u>**Answer**</u> <u>**With evidence**</u> <u>**Without evidence**</u>
					           <u>**for 1st mark**</u> <u>**for 1st mark**</u>
					
					  6·48 3/3 ✓✓✓ 2/3 ✗✓✓
					259·2 [1296 ÷ 5] 1/3 ✓✗✗ 0/3
					
					4. Disregard subsequent rounding after a division
					  e.g. (a) $1296 \div 200 = 6\cdot48 = 6\cdot5$
					         award 3/3
					      (b) $1296 \div 200 = 6\cdot5$
					         award 2/3 ✓✓✗
					
					5. Accept Σf$x \div 100 \times 2$ as evidence of **knowing** to divide Σfx by 200

Question			Expected Answer/s	Max Mark	Additional Guidance

7	**a**		**Ans: 360 cm^3**
			
			•^{1} know how to calculate area of end: $\frac{1}{2} \times 8 \times 6$
			
			•^{2} know to multiply area of end by 15: $\frac{1}{2} \times 8 \times 6 \times 15$
			
			•^{3} carry out **all** calculations correctly: 360
				3	1. Correct answer without working award 3/3
					
					2. 24 [$\frac{1}{2} \times 8 \times 6$] (no working necessary) award 1/3 ✓✗✗
					
					3. 2nd mark only available for knowing to multiply **calculated** 'area' by 15 e.g. (working must be shown)
					  (a) 48(8 × 6) × 15 = 720 award 2/3 ✗✓✓
					  (b) 14(8 + 6) × 15 = 210 award 2/3 ✗✓✓
					
					4. Accept e.g. 24 × 10 × 5 as evidence of **knowing** to multiply 24 × 15
					
					5. 3rd mark is not available for correct answer to (number ≤ 10)×15 or 100×15 e.g. $\sqrt{(6^2+8^2)} \rightarrow 10\times15 = 150$ award 1/3 ✗✓✗

7	**b**		**Ans: 9 cm** •^{1} correct method: e.g. 4 × 10 × h = 360 or 360 ÷ 40 •^{2} calculate height of cuboid: 9	**2**	1. Correct answer without working award 2/2 2. Answer to (b) must be consistent with answer to (a) [no working necessary] 3. Do not accept 'answer to (a) – 40' as evidence of correct method e.g. 360 – 40 = 320 award 0/2

Question			Expected Answer/s	Max Mark	Additional Guidance
8	a		**Ans: −11** $\bullet^1$ multiply $-3 \times (-2)$ correctly: 6 $\bullet^2$ subtract 17 correctly: $6 - 17 = -11$	2	1. Correct answer without working award 2/2. 2. −23 (no working necessary) award 1/2 ✗✓ 3. 11 with no working award 0/2
8	b		**Ans: 9** $\bullet^1$ add 17 correctly: $-35 + 17 = -18$ $\bullet^2$ divide by −2 correctly: $-18 \div (-2) = 9$	2	1. Correct answer without working award 2/2. 2. Answer may appear in the number machine or equivalent e.g. $9 \times (-2) = -18 -17 = -35$ 3. −9 (working must be shown) award 1/2

Question			Expected Answer/s	Max Mark	Additional Guidance
9			**Ans: $n < 48$** $\bullet^1$ collect constants: $\frac{1}{4}n < 12$ $\bullet^2$ solve inequality for n: $n < 48$	**2**	1. For answers without valid working award 1/2 e.g. (a) $n < 48$ without working $\times\checkmark$ (b) $\frac{1}{4} \times 48 - 2 < 10 \rightarrow n < 48$ $\times\checkmark$ (c) $\frac{1}{4}n = 12 \rightarrow n < 48$ $\times\checkmark$ 2. Answers acceptable for partial credit (valid working must be shown) award 1/2 (a) $\frac{1}{4}n < 12$ $\rightarrow n < 3$ $\checkmark\times$ (b) $\frac{1}{4}n < 12$ $\rightarrow\, < 48$ $\checkmark\times$ (c) $\frac{1}{4}n < 12$ $\rightarrow n = 48$ $\checkmark\times$ (d) $\frac{1}{4}n = 12$ $\rightarrow n = 48$ $\checkmark\times$ (e) $\frac{1}{4}n < 8$ $\rightarrow n < 32$ $\times\checkmark$

TOTAL MARKS FOR PAPER 1

30

[END OF MARKING INSTRUCTIONS]