2010 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 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/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 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 $\sin x° = 0{\cdot}5 = 30°$
- 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: 3·92** •[1] calculate 9·22 – 5·3: 3·92	**1**	
1	**b**		**Ans: 1·76** •[1] calculate 528 ÷ 300: 1·76	**1**	
1	**c**		**Ans: 150** •[1] calculate 60% of 250: 150	**1**	
2	**a**		**Ans: £1·40** •[1] interpret line graph: 1·40	**1**	
2	**b**		**Ans: Increased spending on fruit and decreased spending on sweets** •[1] interpret trends in line graph: spending on fruit went up **and** spending on sweets went down	**1**	1. Disregard numerical errors in an otherwise correct answer 2. Answer must **clearly** show that candidate is not just comparing spending on fruit and sweets in December e.g. Accept "Over the year she spent more on fruit and less on sweets." **Do not** accept "She spent more on fruit and less on sweets." 3. Accept "Fruit went up and sweets went down."

Question			Expected Answer/s	Max Mark	Additional Guidance
3	**a**		**Ans: 7a + 20** •[1] multiply out bracket: 22a + 20 – 15a or 20 – 15a •[2] collect like terms: 7a + 20	**2**	1. Correct answer without working award 2/2 2. 2nd mark is not available if there is invalid subsequent working eg 7a + 20 → 27a award 1/2 7a + 20 → 20/7 award 1/2
3	**b**		**Ans: 4(9 + 2n)** •[1] identify highest common factor: 4 or 9 + 2n •[2] factorise: 4(9 + 2n)	**2**	1. 2(18 + 4n), 8(4·5 + n) award 1/2 ×✓

<table>
<tr><th colspan="3">Question</th><th>Expected Answer/s</th><th>Max Mark</th><th>Additional Guidance</th></tr>
<tr><td>4</td><td>a</td><td></td><td>Ans: A(–5,–2) and B(3,–2) plotted

•1 plot (–5,–2) and (3,–2)</td><td>1</td><td>1. Points need not be labelled, but if they are then they must be labelled correctly</td></tr>
<tr><td>4</td><td>b</td><td></td><td>Ans: (–1,4) or (–1,–8) plotted

•1 plot 3rd vertex of any isosceles triangle ABC

•2 plot 3rd vertex of any triangle ABC with area 24 square units</td><td>2</td><td>1. Where C is plotted disregard any wrong coordinates stated by candidate

2. Where (y,x) is consistently plotted both marks are available on follow through</td></tr>
<tr><td>5</td><td></td><td></td><td>Ans:

<table>
<tr><th>120</th><th>105</th><th>100</th><th>95</th><th>80</th><th>Total</th></tr>
<tr><td></td><td></td><td>✓</td><td>✓</td><td>✓</td><td>275</td></tr>
<tr><td></td><td>✓</td><td>✓</td><td></td><td>✓</td><td>285</td></tr>
<tr><td>✓</td><td></td><td></td><td>✓</td><td>✓</td><td>295</td></tr>
<tr><td>✓</td><td></td><td>✓</td><td></td><td>✓</td><td>300</td></tr>
<tr><td></td><td>✓</td><td>✓</td><td>✓</td><td></td><td>300</td></tr>
</table>
•1 complete one row correctly

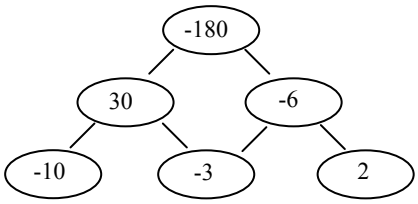
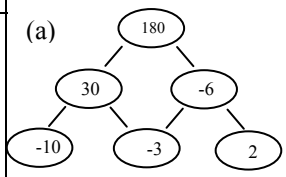
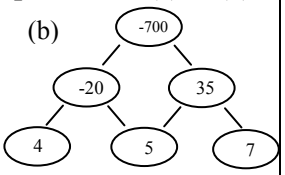
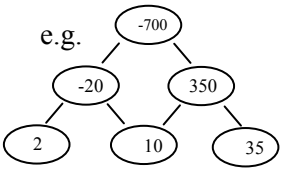
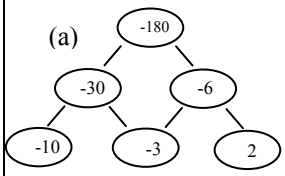
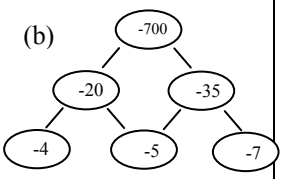
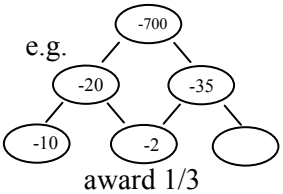
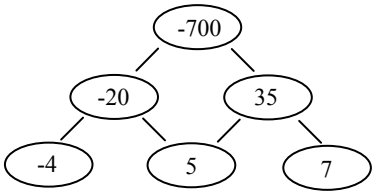
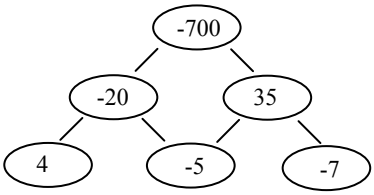
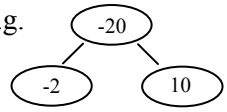
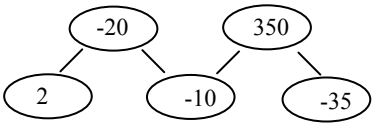
•2 complete another two rows correctly

•3 complete final two rows correctly</td><td>3</td><td>1. Where there are missing totals a maximum of 2 marks is available
(a) 5 rows otherwise “correct” award 2/3
(b) 2 rows otherwise “correct award 1/3</td></tr>
</table>

Question			Expected Answer/s	Max Mark	Additional Guidance
6			**Ans: 10.45 am** •[1] know to multiply 3·5 by 40 then add 25: $3{\cdot}5 \times 40 + 25$ •[2] multiply then add correctly: 165 •[3] convert cooking time into hours and minutes: 2h45m •[4] correctly subtract time involving hours and minutes from 1.30pm: 10.45(am)	**4**	1.Correct answer without working award 4/4 2. Some common answers (no working necessary) (a) 2·45 award 3/4 ✓✓✓× (b) 10.45pm award 3/4 ✓✓✓× (c) 3·5×(40+25) = 227·5 = 3h47m or 3h48m → 9.43 or 9.42 award 3/4 ×✓✓✓ (d) 3·5×40 + 3×25 = 215 = 3h35m → 9.55 award 3/4 ×✓✓✓ (e) 1·5×40 + 25 = 85 = 1h25m → 12.05 award 3/4 ×✓✓✓ (f) 3×40 + 25 = 145 = 2h25m → 11.05 award 2/4 ××✓✓ (g) 3·5×40 = 140 = 2h20m → 11.10 award 2/4 ××✓✓ 3. Alternative method (repeated subtraction) •[1]•[2] correct method: 1.30–40–40–40–20–25 (award 1 for 1.30–40–20–25 **or** 1.30–40–40–20–25 **or** 1.30+40+40+40+20+25) •[3]•[4] subtract (or add) correctly: (must involve 40, 20 **and** 25) (award 1 for **correct method** with **one** error in calculation **or** correct subtraction (or addition) of 40,20 **and** 25 from (to)1.30) 4. Some common answers using alternative method (no working necessary) (a) 1.30–40–20–25 = 11.05 award 2/4 ××✓✓ (b) 1.30–40–25 = 12.25 award 0/4

Question	Expected Answer/s	Max Mark	Additional Guidance
7	**Ans: –16** •[1] carry out calculations in correct order: square, then multiply by 4, then subtract from 20 •[2] correct square calculation: 9 •[3] subtract correctly: –16	**3**	1. Correct answer without working award 3/3 2. Stating $20–4\times3^2$ alone is **insufficient** for awarding the 1st mark 3. 3rd mark only available for correctly carrying out a subtraction with a negative answer 4. Some common answers (working must be shown) (a) $20–4\times3^2 = 20–36$ (= 16) award 2/3 ✓✓× (b) $20–4\times3^2 = 20–4\times6 = 20–24 = –4$ award 2/3 ✓×✓ (c) $20–4\times9$ award 1/3 ×✓× (d) $20–(4\times3)^2 = 20–144 = –124$ award 2/3 ×✓✓ (e) $(20–4)\times3^2 = 16\times9 = 144$ award 1/3 ×✓× (f) $(20–4)\times3^2 = 16\times6 = 96$ award 0/3 ××× 5. Special case: $20–4\times3 = 20–12 = 8$ award 1/3

Question			Expected Answer/s	Max Mark	Additional Guidance
8			**Ans: t = 7** •[1] start to collect like terms: 8t or 56 •[2] collect like terms **and** equate: 8t = 56 •[3] solve equation for t: t = 7	**3**	1. For the award of the 3rd mark an answer of the form ' t = ' is required 2. Alternative Strategy −8t = −56 → t = 7 award 3/3 3. For answers without valid working eg (a) 60 = 8t + 4 → 56 ÷ 8 → t = 7 award 2/3 ✓×✓ (b) t = 7 without working award 1/3 ××✓ (c) 56 ÷ 8 = 7 award 1/3 ✓×× (d) 3 × 7 + 60 = 11 × 7 + 4 → t = 7 award 1/3 ××✓ 4. Answers acceptable for partial credit (valid working must be shown) (a) 8t = 56 → 7 ✓✓× (b) 8t = 64 → t = 8 award 2/3 ✓×✓ (c) 14t = 56 → t = 4 ✓×✓ (d) 14t = 64 → t = 4·6 or 4·5… award 1/3 ××✓ (disregard incorrect rounding)

Question			Expected Answer/s	Max Mark	Additional Guidance
9	a		**Ans:**  •[1] 30 correctly entered •[2] –180 correctly entered	**2**	1. All entries must be positive or negative whole numbers. 2. **All** candidate entries **positive** in (a) & (b) (a)  award 1/2 (b)  award 2/3 e.g.  award 1/3 3. **All** candidate entries **negative** in (a) & (b) (a)  award 0/2 (b)  award 2/3 e.g.  award 1/3
9	b		**Ans:**  **OR**  •[1]•[2] •[3] pyramid completed correctly. award 1 mark for one consistent triangle e.g.  award 2 marks for two consistent triangles e.g.  	**3**	

TOTAL MARKS FOR PAPER 1

30

[END OF MARKING INSTRUCTIONS]