



2007 Mathematics

Intermediate 1 Units 1, 2 & 3 Paper 1

Finalised Marking Instructions

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General Marking Principles

These principles describe the approach to be taken when marking Intermediate 1 Mathematics papers. For more detailed guidance please refer to the notes which are included with the Marking Instructions.

- 1 Marks must be assigned in accordance with the Marking Instructions. The main principle in marking scripts is to give credit for the skills demonstrated and the criteria met. Failure to have the correct method may not preclude a candidate gaining credit for the calculations involved or for the communication of the answer.
- 2 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 is not simplified.
- 3 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 scheme)
 - bad form, eg $\sin x^\circ = 0.5 = 30^\circ$
 - legitimate variation in numerical values / algebraic expressions.
- 4 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 mark(s).
- 5 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.
- 6 In general markers will only be able to 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 the outside of the question papers emphasises that working must be shown.
- 7 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.
- 8 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.
- 9 Do not penalise the same error twice in the same question.
- 10 Do not penalise a transcription error unless the question has been simplified as a result.
- 11 Do not penalise inadvertent use of radians in trigonometry questions, provided their use is consistent within the question.

Practical Details

The Marking Instructions should be regarded as a working document and have been developed and expanded on the basis of candidates' responses to a particular paper. While the guiding principles of assessment remain constant, details can change depending on the content of a particular examination paper in a given year.

- 1 Each mark awarded in a question is referenced to one criterion in the marking scheme by means of a bullet point.
- 2 Where a candidate has scored zero marks for any question attempted, "0" should be shown against the answer in the place in the margin.
- 3 Where a marker wishes to indicate how s/he has awarded marks, the following should be used:
 - (a) Correct working should be ticked, ✓.
 - (b) Where working subsequent to an error is followed through, if otherwise correct and can be awarded marks, it should be marked with a crossed tick, ✗.
 - (c) Each error should be underlined at the point in the working where it first occurs.
- 4 **Do not write any comments, words or acronyms on the scripts.**

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

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
1 (a)	Ans: 19.22 • ¹ process: calculate $8.52 + 10.7$	• ¹ 19.22 <p style="text-align: right;">1 mark</p>
(b)	Ans: 0.47 • ¹ process: calculate $3.76 \div 8$	• ¹ 0.47 <p style="text-align: right;">1 mark</p>
(c)	Ans: $\frac{57}{1000}$ • ¹ process: change 0.057 into a fraction	• ¹ $\frac{57}{1000}$ <p style="text-align: right;">1 mark</p>
(d)	Ans: £288 • ¹ strategy: correct method • ² process: calculate 90% of £320	• ¹ eg $320 \div 10 \times 9$ or equivalent • ² 288 <p style="text-align: right;">2 marks</p>
NOTES: 1. Correct answer without working award 2/2 2. 28.8(0) no working necessary award 1/2		
2	Ans: £61.20 • ¹ strategy: correct method • ² process: multiply correctly (see note 3)	• ¹ 8×7.65 • ² 61.2(0) <p style="text-align: right;">2 marks</p>
NOTES: 1. Correct answer without working award 2/2 2. Do not award 1st mark for eg $8 \times 7.65 + 8000$ 3. 2 nd mark only available for correctly multiplying 7.65 by any number > 6 except 10, 100, 1000 etc		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
3	<p>Ans: $a < 9$</p> <ul style="list-style-type: none"> •¹ process: collect constants •² process: solve inequality for a 	<ul style="list-style-type: none"> •¹ $7a < 63$ •² $a < 9$ <p style="text-align: right;">2 marks</p>

NOTES:

1. For answers without valid working award 1/2
eg (i) $a < 9$ without working
(ii) $7 \times 9 + 6 < 69 \rightarrow a < 9$
2. Answers acceptable for partial credit (valid working must be shown) award 1/2
(i) $7a < 63 \rightarrow a < 9$
(ii) $7a < 63 \rightarrow a = 9$ or $7a = 63 \rightarrow a = 9$
(iii) $7a < 75 \rightarrow a < 10.7$ (disregard incorrect rounding)

4	<p>Ans: 7.8 minutes</p> <ul style="list-style-type: none"> •¹ communicate/process: complete table •² strategy: know to divide Σfx by 50 •³ process: correctly divide Σfx 	<ul style="list-style-type: none"> •¹ $\begin{array}{r} 108 \\ \underline{60} \\ 390 \end{array}$ •² $390 \div 50$ •³ 7.8 <p style="text-align: right;">3 marks</p>
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NOTES:

1.

<u>Final answer</u>	<u>Criterion for 1st mark met</u>	<u>Criterion for 1st mark not met</u>
7.8	3/3	2/3
65 ($390 \div 6$)	1/3	0/3
2. Award of 1st mark
108, 60 and 390 need not appear in table but must be shown in working
3. Do not award 3rd mark for a division by 10 or a division with a whole number answer
eg $390 \div 6 = 65$, $389 \div 10 = 38.9$, $400 \div 50 = 8$
Acceptable answers to division should be rounded or truncated to at least one decimal place
eg $388 \div 6 = 64.6\dots$ or 64.7

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
5 (a)	Ans: -7, -3, 9 • ¹ process: calculate y when $x = -1$ • ² process: calculate y when $x = 0$ and $x = 3$	• ¹ -7 • ² -3 and 9 <p style="text-align: right;">2 marks</p>
(b)	Ans: straight line graph of $y = 4x - 3$ • ¹ communicate: prepare to draw line • ² communicate: draw the line $y = 4x - 3$	• ¹ all three points from table plotted correctly • ² draw straight line through the four points shown in the table <p style="text-align: right;">2 marks</p>
NOTES: 1 If the line $y = 4x - 3$ is drawn (minimum acceptable length: line joining $(-1, -7)$ to $(1, 1)$ or $(0, -3)$ to $(2, 5)$) award 2/2 2 Where the four points in the table satisfy $y = x$ or $y = 2 - x$ then award 1/2 for drawing a line through the four points		
6	Ans: 8cm • ¹ strategy: know to let $l b h = \text{volume of container}$ • ² strategy: know how to find height of container • ³ process: carry out all calculations correctly	• ¹ $20 \times 10 \times h = 1600$ • ² $\frac{1600}{20 \times 10}$ • ³ 8 <p style="text-align: right;">3 marks</p>
NOTES: 1. 8 with no working award 0/3 2. Answers acceptable for partial credit (working must be shown) (i) $20 \times 10 \times 8$ award 2/3 (ii) $1600 \div (20 + 10) = 53.3\dots$ award 2/3 (iii) $1600 - 200 = 1400$ award 1/3		

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
7 (a)	Ans: -8 • ¹ process: calculate $2 \times (-2) \times 2$	• ¹ -8 1 mark
(b)	Ans: 17 • ¹ process: calculate $11 - (-6)$	• ¹ 17 1 mark
NOTES:		
8	Ans: see below • ¹ interpret: interpret information • ² strategy: find some possibilities • ³ strategy: find all possibilities	• ¹ one correct row • ² two more correct rows • ³ final two correct rows 3 marks
NOTES:		
1. Where there are missing or incorrect totals a maximum of 2 marks is available (a) 5 rows of ticks “correct” award 2/3 (b) 2 rows of ticks “correct” award 1/3		

Lamp 100 watts	Computer 200 watts	Games Machine 400 watts	Microwave 700 watts	Heater 1000 watts	Kettle 2300 watts	Total Watts
✓	✓	✓			✓	3000
✓	✓		✓	✓		2000
✓		✓	✓	✓		2200
	✓	✓	✓	✓		2300
✓	✓	✓	✓			1400

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
9	Ans: 54 • ¹ process: start to evaluate • ² process: continue evaluation • ³ process: complete evaluation	• ¹ see note 1 • ² see note 1 • ³ 54 <p style="text-align: right;">3 marks</p>

NOTES:

1. •¹ (a) $3(11+7)$ (b) $\frac{1}{2} \times 6 \times 18$ (c) $\frac{1}{2} \times 6 \times 11 + \frac{1}{2} \times 6 \times 7$

•² $= 3 \times 18$ $= \frac{1}{2} \times 108$ $= 3 \times 11 + 3 \times 7$

or
 $\frac{1}{2} \times 66 + \frac{1}{2} \times 42$

<u>Final answer</u>	<u>With working</u>	<u>Without working</u>
54	3/3	3/3
108 (6×18)	2/3	0/3
40 (3×11+7)	2/3	0/3
75 ($\frac{1}{2} \times 66 + 42$)	2/3	0/3
36.5 ($\frac{1}{2} \times [66 + 7]$)	2/3	0/3
73 (66+7)	1/3	0/3
21 (3+18)	1/3	0/3
231 (3×11×7)	1/3	0/3
24 (6+11+7)	0/3	0/3
12 ($\frac{1}{2} [6 + 11 + 7]$)	0/3	0/3

Question No	Marking Scheme Give 1 mark for each •	Illustrations of evidence for awarding a mark at each •
10	<p>Ans: $\frac{9}{15}$, $\frac{8}{15}$ so bag 1</p> <ul style="list-style-type: none"> •¹ process: find probability •² strategy/process: find other probability and attempt to compare it with first probability •³ strategy/process/communicate: compare fractions and state conclusion 	<ul style="list-style-type: none"> •¹ $\frac{3}{5}$ or $\frac{8}{15}$ •² $\frac{3}{5}$ and $\frac{8}{15}$ and evidence of attempting to compare probabilities •³ $\frac{9}{15}$ so Bag 1 <p style="text-align: right;">3 marks</p>
<p>NOTES:</p> <p>1. Accept 8:15, 8 out of 15, 8 in 15, 8 – 15, 0.53, 53%</p>		

TOTAL MARKS FOR PAPER 1

30

[END OF MARKING INSTRUCTIONS]