



2010 Mathematics

Standard Grade – Foundation

Paper 1 and Paper 2

Finalised Marking Instructions

© Scottish Qualifications Authority 2010

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 the External Print Team, Centre Services, Dalkeith.

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 External Print Team, Centre Services, at Dalkeith 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.

Special Instructions

- 1 The main principle in marking scripts is to give credit for the skills which have been demonstrated. Failure to have the correct method may not preclude a pupil gaining credit for the calculations involved or for the communication of the answer.

Care should be taken to ensure that the mark for any question or part question is entered in the correct column, as indicated by the horizontal line.

Where a candidate has scored zero marks for any question attempted, "0" should be shown against the answer in the appropriate column.

It is of great importance that the utmost care should be exercised in adding up the marks. Where appropriate, all summations for totals and grand totals must be carefully checked.

- 2 The answer to one part, correct **or incorrect** must be accepted as a basis for subsequent dependent parts of a question. Full marks in the dependent part are possible if it is of equivalent difficulty.

- 3 Do not penalise insignificant errors. An insignificant error is one which is significantly below the level of attainment being assessed.

eg An error in the calculation of $16 + 15$ would not be penalised at Credit Level.

- 4 Working after a correct answer should **only** be taken into account if it provides **firm** evidence that the requirements of the question have not been met.

- 5 In certain cases an error will ease subsequent working. **Full** credit cannot be given for this subsequent work but **partial** credit may be given.

- 6 Accept answers arrived at by inspection or mentally, where it is possible for the answer to have been so obtained.

- 7 Do not penalise omission or misuse of units unless marks have been specifically allocated to units.

- 8 A wrong answer without working receives no credit unless specifically mentioned in the marking scheme.

The rubric on the outside of the Papers emphasises that working must be shown. In general markers will only be able to give credit to partial answers if working is shown. However there may be a few questions where partially correct answers unsupported by working can still be given some credit. **Any such instances will be stated in the marking scheme.**

- 9 Acceptable alternative methods of solution can only be given the marks specified, ie a more sophisticated method cannot be given more marks.

Note that for some questions a method will be specified.

- 10 In general do not penalise the same error twice in the one question.

- 11 Accept legitimate variations in numerical/algebraic questions.

- 12 Do not penalise bad form eg $\sin x^0 = 0.5 = 30^0$.

- 13 A transcription error is not normally penalised except where the question has been simplified as a result.

- 14 When multiple solutions are presented by the candidate and it is not clear which is intended to be the final one, mark all attempts and award the lowest mark.

2010 Mathematics SG – Foundation Level – Paper 1

Marking Instructions

Award marks in whole numbers only

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																								
1 (a)	Ans: 8972 • ¹ correctly add 8325 and 647	• ¹ 8972 <p style="text-align: right;">1K</p>																								
(b)	Ans: £19.5(0) • ¹ correctly multiply £3.25 by 6	• ¹ £19.5(0) <p style="text-align: right;">1K</p>																								
(c)	Ans: 5.6 • ¹ know how to find 10% of 56 • ² find 10% of 56	• ¹ $56 \div 10$ or equivalent • ² 5.6 <p style="text-align: right;">2K</p>																								
<p>NOTES:</p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="text-align: left;">1.</th> <th style="text-align: left;">Final Answers</th> <th style="text-align: left;">with working</th> <th style="text-align: left;">without working</th> </tr> </thead> <tbody> <tr> <td></td> <td>5.6</td> <td>2/2</td> <td>2/2</td> </tr> <tr> <td></td> <td>28 (50%)</td> <td>1/2</td> <td>0/2</td> </tr> <tr> <td></td> <td>18.6 (666...) (33$\frac{1}{3}$%)</td> <td>1/2</td> <td>0/2</td> </tr> <tr> <td></td> <td>14 (25%)</td> <td>1/2</td> <td>0/2</td> </tr> <tr> <td></td> <td>11.2 (20%)</td> <td>1/2</td> <td>0/2</td> </tr> </tbody> </table>			1.	Final Answers	with working	without working		5.6	2/2	2/2		28 (50%)	1/2	0/2		18.6 (666...) (33 $\frac{1}{3}$ %)	1/2	0/2		14 (25%)	1/2	0/2		11.2 (20%)	1/2	0/2
1.	Final Answers	with working	without working																							
	5.6	2/2	2/2																							
	28 (50%)	1/2	0/2																							
	18.6 (666...) (33 $\frac{1}{3}$ %)	1/2	0/2																							
	14 (25%)	1/2	0/2																							
	11.2 (20%)	1/2	0/2																							
2	Ans: $\frac{1}{4}$ • ¹ correctly fill in the missing fraction	• ¹ $\frac{1}{4}$ or equivalent <p style="text-align: right;">1K</p>																								
<p>NOTES:</p>																										

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
3	Ans: correctly completed reflection • ¹ reflect lines • ² reflect lines • ³ reflect lines • ⁴ reflect shape	• ¹ reflect 2 lines correctly • ² reflect further 2 lines correctly • ³ reflect further 2 lines correctly • ⁴ complete reflection 4R
NOTES:		
4	Ans: 35 • ¹ know how to calculate days • ² correctly divide	• ¹ $175 \div 5$ • ² 35 2K
NOTES:		
5	Ans: • — — • • — • • ¹ interpret code in diagram • ² interpret code in diagram • ³ interpret code in diagram	• ¹ P = • — — • • ² E = • • ³ N = — • 3R
NOTES:		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark				
6	Ans: 55° <ul style="list-style-type: none"> •¹ correct strategy •² correctly carry out calculation(s) (must include a subtraction) 	<ul style="list-style-type: none"> •¹ 90 – 35 or equivalent •² 55 <p style="text-align: right;">2K</p>				
<p>NOTES:</p> <p>1. Some common answers (with or without working)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;">145 (180 – 35)</td> <td style="width: 40%;">award 1/2</td> </tr> <tr> <td>325 (360 – 35)</td> <td>award 1/2</td> </tr> </table>			145 (180 – 35)	award 1/2	325 (360 – 35)	award 1/2
145 (180 – 35)	award 1/2					
325 (360 – 35)	award 1/2					

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																				
7 (a)	Ans: 16 litres • ¹ interpret graph	• ¹ 16 litres 1K																				
(b)	Ans: £54 METHOD 1 • ¹ create a formula for 36 • ² correctly convert from graph • ³ correctly carry out all calculations within a valid strategy	• ¹ 20 + 16 or equivalent • ² £30 + £24 or equivalent • ³ £54 3R																				
	METHOD 2 • ¹ know how to find cost of 1 litre • ² know how to find cost of 36 litres • ³ correctly carry out all calculations	• ¹ 12 ÷ 8 or equivalent • ² 12 ÷ 8 × 36 • ³ £54																				
<p>NOTES:</p> <ol style="list-style-type: none"> METHOD 1 may be shown in tabular form. A common answer (award 2/3 with working ✓×✓) <table border="0" style="margin-left: 20px;"> <tr> <td>(l)</td><td>20</td><td>22</td><td>24</td><td>26</td><td>28</td><td>30</td><td>32</td><td>34</td><td>36</td> </tr> <tr> <td>(£)</td><td>30</td><td>32</td><td>34</td><td>36</td><td>38</td><td>40</td><td>42</td><td>44</td><td>46</td> </tr> </table> For an answer of £1·50, with or without working, award 1/3 Where a candidate reads off 1 litre costs £2, followed by $36 \times £2 = £72$, award 1/3 For $36 \times £3 = £108$, $£36 \times £4 = £144$, etc, award 0/3 Where the final answer is for the cost of a number of litres > 20, but not 36, eg 32 litres costs £48, award 1/3 Misinterpretation of units: where a candidate calculates that the number of litres corresponding to £36 is 24, with working, award 2/3 			(l)	20	22	24	26	28	30	32	34	36	(£)	30	32	34	36	38	40	42	44	46
(l)	20	22	24	26	28	30	32	34	36													
(£)	30	32	34	36	38	40	42	44	46													

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
8	<p>Ans: position of submarine correctly marked</p> <ul style="list-style-type: none"> •¹ submarine marked on a bearing of 270° •² submarine marked 20 km from ship 	<ul style="list-style-type: none"> •¹ evidence •² evidence <p style="text-align: right;">2K</p>
NOTES:		
9	<p>Ans: Team A won by 1 point</p> <ul style="list-style-type: none"> •¹ identify points for Team A •² identify points for Team B •³ know to get total score for each team •⁴ correctly carry out all calculations and valid conclusion with numerical comparison 	<ul style="list-style-type: none"> •¹ 0, 0, 3, 4 •² 1, 2, 3, 0 •³ evidence of 2 lots of addition •⁴ Team A since $7 > 6$ <p style="text-align: right;">4R</p>
<p>NOTES:</p> <p>1. For the award of the final mark, it must be stated that Team A won because $7 > 6$ or because it had 1 more point than Team B or because it scored 7 points and Team B scored 6 points.</p>		

**KU 12 marks
RE 14 marks**

[END OF PAPER 1 MARKING INSTRUCTIONS]

2010 Mathematics SG – Foundation Level – Paper 2

Marking Instructions

Award marks in whole numbers only

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark									
1	<p>Ans: £380</p> <p>•¹ •² know how to calculate pay</p> <p>•³ correctly calculate pay</p>	<p>•¹•² $23.75 \times 2 \times 8$ (award 1 mark for 23.75×2 or 23.75×8 or 2×8)</p> <p>•³ £380</p> <p style="text-align: right;">3K</p>									
<p>NOTES:</p> <p>1. Some common answers (with or without working)</p> <table style="width: 100%; border: none;"> <tr> <td style="width: 33%;">47.5(0)</td> <td style="width: 33%;">(23.75×2)</td> <td style="width: 33%;">award 1/3</td> </tr> <tr> <td>190</td> <td>(23.75×8)</td> <td>award 1/3</td> </tr> <tr> <td>16</td> <td>(2×8)</td> <td>award 1/3</td> </tr> </table> <p>2. For an answer of £95 ($23.75 \times 0.5 \times 8$), with working, award 2/3</p>			47.5(0)	(23.75×2)	award 1/3	190	(23.75×8)	award 1/3	16	(2×8)	award 1/3
47.5(0)	(23.75×2)	award 1/3									
190	(23.75×8)	award 1/3									
16	(2×8)	award 1/3									
2 (a)	<p>Ans: 220 metres</p> <p>•¹ know how to find perimeter</p> <p>•² correctly add (at least 3 numbers)</p>	<p>•¹ $40 + 30 + 20 + 20 + 60 + 50$</p> <p>•² 220</p> <p style="text-align: right;">2K</p>									
(b)	<p>Ans: £550</p> <p>•¹ know how to find cost</p> <p>•² correctly multiply</p>	<p>•¹ 220×2.5</p> <p>•² £550</p> <p style="text-align: right;">2K</p>									
<p>NOTES:</p> <p>1. For an answer of £88 ($220 \div 2.5$), with or without working, award 0/2</p>											

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																
3 (a)	<p>Ans: <table border="1" style="display: inline-table; vertical-align: middle;"> <tr> <td>1</td><td>2</td><td>3</td><td>4</td><td>5</td><td>6</td><td></td><td>11</td> </tr> <tr> <td>5</td><td>9</td><td>13</td><td>17</td><td>21</td><td>25</td><td></td><td>45</td> </tr> </table></p> <p>•¹ interpret diagram and continue pattern</p> <p>•² continue pattern</p> <p>•³ know how to extend pattern</p> <p>•⁴ extend pattern</p>	1	2	3	4	5	6		11	5	9	13	17	21	25		45	<p>•¹ 13</p> <p>•² 17, 21, 25</p> <p>•³ •⁴ 45 (award 1 for evidence of extended pattern but with one error)</p> <p style="text-align: right;">4R</p>
1	2	3	4	5	6		11											
5	9	13	17	21	25		45											

NOTES:

- Follow through errors
3/4 can be awarded for a “correct continuation” with one error

eg 5, 9, 12, 15, 18, 21	36	award 3/4
5, 9, 12, 16, 20, 24	44	award 3/4
5, 9, 14, 18, 22, 26	46	award 3/4
5, 9, 14, 19, 24, 29	54	award 3/4
5, 9, 14, 20, 27, 35	90	award 3/4
5, 9, 15, 23, 33, 45	135	award 3/4

(b)	<p>Ans: $\times 4 + 1$</p> <p>•¹ •² generalise pattern</p>	<p>•¹ •² $\times 4 + 1$</p> <p style="text-align: right;">2R</p>
-----	---	--

NOTES:

- Accept “bad form”
eg cross number + cross number + cross number + cross number + 1
- Do not accept “it goes up in fours” or “add on four for each cross number”
- Where a follow through error has been made in part (a), 1/2 may be awarded for a rule which is true for **at least three** of the entries made by the candidate eg for 5, 9, 12, 15, 18, 21 ... 36 in part (a) followed by $\times 3 + 3$ in part (b) award 1/2 in part (b)
- A mark of 1/2 may **only** be awarded for the situation described in note 3.

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
4	<p>Ans: £81.75</p> <p>•¹ •² correct strategy</p> <p>•³ correctly carry out all calculations (must involve subtraction of at least two numbers)</p>	<p>•¹ •² $222.81 - (45.84 + 67.72 + 27.50)$ (the first mark may be awarded for any of the strategies appearing in note 1)</p> <p>•³ £81.75</p> <p style="text-align: right;">3R</p>


NOTES:

1. **Some common answers (with or without working)**

109.25	$(222.81 - 45.84 - 67.72)$	award 2/3
149.47	$(222.81 - 45.84 - 27.50)$	award 2/3
127.59	$(222.81 - 67.72 - 27.50)$	award 2/3
141.06	$(45.84 + 67.72 + 27.50)$	award 1/3
176.97	$(222.81 - 45.84)$	award 1/3
155.09	$(222.81 - 67.72)$	award 1/3
195.31	$(222.81 - 27.50)$	award 1/3

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
5 (a)	Ans: 55 minutes • ¹ correctly find time of ferry	• ¹ 55 minutes 1K
(b)	Ans: 11 hours 25 minutes • ¹ find arrival time in Brodick • ² find departure time from Brodick • ³ know to find time interval • ⁴ correctly calculate time interval	• ¹ 07 55 • ² 19 20 (accept 7.20) • ³ 19 20 – 07 55 • ⁴ 11 hours 25 minutes 4R

NOTES:

- For the award of the 3rd mark, two times contained in the tables must be used.
- For the award of the 4th mark, the time interval must involve one am time and one pm time.
- Evidence of finding a time interval may be eg 19 20 – 07 55, 07 55 to 19 20, 07 55  19 20, or evidence of counting forward.
- Candidates who identify **both** ferries correctly, ie 07 00 – 07 55 **and** 19 20 – 20 15 may be awarded 1 of the first 2 marks.
- Some common answers (with working)

12 hours 20 minutes (20 15 – 07 55)	award 3/4	✓×✓✓
13 hours 15 minutes (20 15 – 07 00)	award 2/4	××✓✓

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
6	Ans: 14 • ¹ find number of cubes	• ¹ 14 1R
NOTES:		
7 (a)	Ans: 4.4 kilograms • ¹ read weight on scale	• ¹ 4.4 1K
(b)	Ans: 4400 grams • ¹ know that 1 kg = 1000 g • ² convert weight to grams	• ¹ 1000 • ² 4400 2K
NOTES: 1. Some common answers (with or without working) 440 (1 kg = 100 g) award 1/2 44 (1 kg = 10 g) award 1/2 0.0044 (4.4 ÷ 1000) award 1/2		

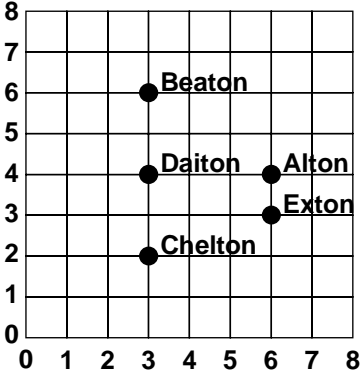
Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
8 (a)	Ans: pictograph correctly completed <ul style="list-style-type: none"> •¹ construct pictograph •² construct pictograph 	<ul style="list-style-type: none"> •¹ 5 sun symbols on Wednesday •² 2.5 sun symbols on Thursday <p style="text-align: right;">2K</p>
(b)	Ans: 3 hours on Friday 4 hours on Saturday <ul style="list-style-type: none"> •¹ know to get total for Sunday to Thursday •² know to subtract above total from 43 •³ correctly carry out all calculations •⁴ identify Friday as one less than Saturday 	<ul style="list-style-type: none"> •¹ $8 + 6 + 7 + 10 + 5$ •² $43 - (8 + 6 + 7 + 10 + 5)$ •³ 7 •⁴ Friday = 3 Saturday = 4 <p style="text-align: right;">4R</p>
<p>NOTES:</p> <ol style="list-style-type: none"> 1. An answer of 7 in the working space, unsupported by evidence, receives no marks. 2. Where the entries in the table are two numbers which add up to 7 (other than 3, 4) award 3/4 		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
9	Ans: £133 • ¹ • ² know how to find mean • ³ add correctly • ⁴ divide correctly	• ¹ • ² $(170 + 122 + 110 + 130) \div 4$ • ³ 532 • ⁴ £133 <div style="text-align: right;">4K</div>

NOTES:

1. **Some common answers (with or without working)**

434.5 $(170 + 122 + 110 + 130 \div 4)$	award 3/4
(incorrect use of calculator)	
532	award 1/4
126 (median)	award 0/4

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
10 (a)	Ans: 6 goals • ¹ interpret graph	• ¹ 6 1K
(b)	Ans:  • ¹ make deduction • ² make deduction • ³ make deduction	 • ¹ Chelton correctly labelled • ² Daiton correctly labelled • ³ Exton correctly labelled 3R
NOTES: 1. Where a candidate has not labelled the dots, 1/3 may be awarded for stating that Daiton scored 4 goals, Exton scored 3 goals and Chelton had 3 fouls. 2. Where a candidate has inserted 3 new dots, 1/3 may be awarded for dots which satisfy the conditions in note 1.		
11	Ans: 5 square metres • ¹ • ² know how to find area of right-angled triangle • ³ carry out calculations correctly (must involve $\frac{1}{2}$ product of at least two numbers)	• ¹ • ² $\frac{1}{2}$ of 4×2.5 (award 1 for $\frac{1}{2} bh$ or 4×2.5) • ³ 5 3K
NOTES: 1. For an answer of 10 (4×2.5) with or without working award 1/3		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark									
12 (a)	Ans: 50 600 • ¹ know to add four stands • ² add correctly	• ¹ $16\,500 + 8600 + 7500 + 18\,000$ • ² 50 600 <div style="text-align: right;">2K</div>									
(b)	Ans: 55 100 • ¹ know how to find increase • ² correct percentage calculation • ³ add correctly to (a)	• ¹ $\frac{25}{100} \times 18\,000$ or equivalent • ² 4500 • ³ 55 100 <div style="text-align: right;">3K</div>									
<p>NOTES:</p> <p>1. Some common answers (with or without working)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">63 250</td> <td style="width: 55%;">(50 600 + 25%)</td> <td style="width: 30%; text-align: right;">award 2/3</td> </tr> <tr> <td>22 500</td> <td>(18 000 + 25%)</td> <td style="text-align: right;">award 2/3</td> </tr> <tr> <td>4500</td> <td>(25% of 18 000)</td> <td style="text-align: right;">award 2/3</td> </tr> </table> <p>2. The 3rd mark is only available when a calculated answer is correctly added to (a).</p>			63 250	(50 600 + 25%)	award 2/3	22 500	(18 000 + 25%)	award 2/3	4500	(25% of 18 000)	award 2/3
63 250	(50 600 + 25%)	award 2/3									
22 500	(18 000 + 25%)	award 2/3									
4500	(25% of 18 000)	award 2/3									
13	Ans: 2·6 centimetres • ¹ • ² know how to find radius • ³ correctly carry out all calculations (must include two divisions)	• ¹ • ² $(145·6 \div 28) \div 2$ (award 1 mark for $145·6 \div 28$ or $145·6 \div 2$ or 28×2) • ³ 2·6 <div style="text-align: right;">3R</div>									
<p>NOTES:</p> <p>1. Some common answers (with or without working)</p> <table style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 15%;">5·2</td> <td style="width: 55%;">(145·6 ÷ 28)</td> <td style="width: 30%; text-align: right;">award 1/3</td> </tr> <tr> <td>72·8</td> <td>(145·6 ÷ 2)</td> <td style="text-align: right;">award 1/3</td> </tr> <tr> <td>56</td> <td>(28 × 2)</td> <td style="text-align: right;">award 1/3</td> </tr> </table>			5·2	(145·6 ÷ 28)	award 1/3	72·8	(145·6 ÷ 2)	award 1/3	56	(28 × 2)	award 1/3
5·2	(145·6 ÷ 28)	award 1/3									
72·8	(145·6 ÷ 2)	award 1/3									
56	(28 × 2)	award 1/3									

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
14 (a)	Ans: 155 minutes • ¹ substitute into formula • ² correctly carry out calculations	• ¹ $3 \times 45 + 20$ • ² 155 <div style="text-align: right;">2K</div>
NOTES: 1. For an answer of 195 [$3 \times (45 + 20)$], with or without working, award 1/2		
(b)	Ans: weight in kilograms $\times 40 + 25$ • ¹ start to construct formula • ² continue to construct formula	• ¹ $25 + \dots\dots$ • ² weight in kilograms $\times 40 + 25$ <div style="text-align: right;">2R</div>
NOTES: 1. Where a candidate writes down a calculation using the correct formula, eg $4 \times 40 + 25$, award 1/2		

KU 28 marks
RE 26 marks

[END OF PAPER 2 MARKING INSTRUCTIONS]

FINAL	KU 40
TOTALS	RE 40