



**2009 Mathematics**

**Standard Grade General**

**Finalised Marking Instructions**

© Scottish Qualifications Authority 2009

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 Question Paper Operations Team, 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 Question Paper Operations Team 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 is 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.

**2009 Mathematics SG – General Level – Paper 1**

**Marking Instructions**

Award marks in whole numbers only

<b>Question No</b>	<b>Give 1 mark for each •</b>	<b>Illustrations of evidence for awarding each mark</b>
<b>1 (a)</b>	<b>Ans: 2·44</b> • <sup>1</sup> correct subtraction	• <sup>1</sup> 2·44  <b>1K</b>
<b>(b)</b>	<b>Ans: 138 000</b> • <sup>1</sup> correct multiplication	• <sup>1</sup> 138 000  <b>1K</b>
<b>(c)</b>	<b>Ans: 36·7</b> • <sup>1</sup> correct division	• <sup>1</sup> 36·7  <b>1K</b>
<b>(d)</b>	<b>Ans: 43·2</b> • <sup>1</sup> find 10% or equivalent • <sup>2</sup> correct multiplication	• <sup>1</sup> $54 \div 10 = 5·4$ • <sup>2</sup> $5·4 \times 8 = 43·2$  <b>2K</b>

NOTES:

In part (d)

<b>Final Answers</b>	<b>with working</b>	<b>without working</b>
43·2	2/2	2/2
0·54	1/2	1/2
$10·8 \left( \frac{1}{5} \times 54 \right)$	1/2	1/2

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
2	<b>Ans:</b> $2.96 \times 10^{-2}$ • <sup>1</sup> correct coefficient • <sup>2</sup> correct power of ten within a valid expression	• <sup>1</sup> 2.96 • <sup>2</sup> $\times 10^{-2}$ <div style="text-align: right;"><b>2K</b></div>

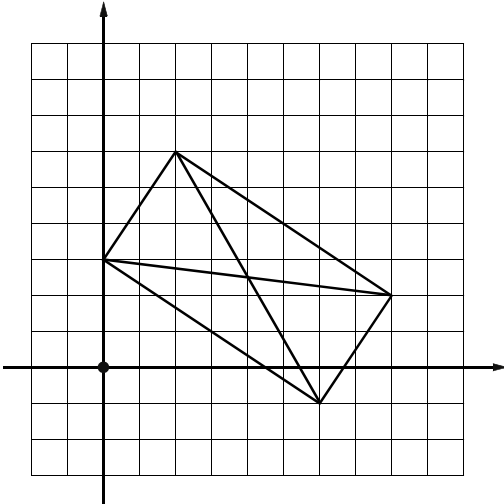
NOTES:

(i) The second mark can be awarded for a consistent power of ten eg  $29.6 \times 10^{-3}$

(ii)	<b>Final Answers</b>	<b>with working</b>	<b>without working</b>
	$2.96 \times 10^{-2}$	2/2	2/2
	$2.9 \times 10^{-2}$	1/2	1/2

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																
3 (a)	<p><b>Ans:</b></p> <table border="1" data-bbox="352 383 1182 454"> <tr> <td>Number of sections (<math>s</math>)</td> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td>5</td> <td></td> <td>11</td> </tr> <tr> <td>Number of metal rings (<math>r</math>)</td> <td>4</td> <td>9</td> <td>14</td> <td>19</td> <td>24</td> <td></td> <td>54</td> </tr> </table> <p>•<sup>1</sup> any two correct number of rings</p> <p>•<sup>2</sup> two further correct number of rings</p>	Number of sections ( $s$ )	1	2	3	4	5		11	Number of metal rings ( $r$ )	4	9	14	19	24		54	<p>•<sup>1</sup> any two from 14, 19, 24, 54</p> <p>•<sup>2</sup> remaining two from 14, 19, 24, 54</p> <p style="text-align: right;"><b>2R</b></p>
Number of sections ( $s$ )	1	2	3	4	5		11											
Number of metal rings ( $r$ )	4	9	14	19	24		54											
(b)	<p><b>Ans: <math>r = 5s - 1</math></b></p> <p>•<sup>1+2</sup> correct formula</p>	<p>•<sup>1+2</sup> <math>r = 5s - 1</math></p> <p style="text-align: right;"><b>2R</b></p>																
(c)	<p><b>Ans: 16</b></p> <p>•<sup>1</sup> correct strategy to find <math>s</math></p> <p>•<sup>2</sup> correct calculation</p>	<p>•<sup>1</sup> <math>79 = 5s - 1</math></p> <p>•<sup>2</sup> <math>s = 16</math></p> <p style="text-align: right;"><b>2R</b></p>																
<p>NOTES:</p> <p>In part (b)</p> <p>(i) for an answer of (=) <math>5s - 1</math> award 1/2</p> <p>(ii) do not penalise bad form eg <math>r = 4s + s - 1</math></p> <p>(iii) a formula in words is not acceptable</p> <p>(iv) for <math>s = 5r - 1</math> award 0/2</p> <p>In part (c)</p> <p>(i) <b>Alternative Strategy</b></p> <p>•<sup>1</sup> correct strategy to find <math>s</math>      •<sup>1</sup> 11(sections) → 54 (from table) 54 + 25 = 79</p> <p>•<sup>2</sup> correct calculation      •<sup>2</sup> 25 = 5 × 5 (common difference) 11 (sections) + 5 (more) = 16 (sections)</p> <p>(ii) solution may be obtained by extending table</p> <p>(iii) for a final answer of 16 without working award 0/2</p> <p>(iv) for <math>79 \div 5 + 1</math> leading to an answer of 16, 16.8, or 17 award 1/2</p>																		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
4	<p><b>Ans: 4 tiles correctly added to drawing</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> 1 tile added correctly to tiling</li> <li>•<sup>2</sup> a further tile added correctly</li> <li>•<sup>3</sup> two further tiles added correctly</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup></li> <li>•<sup>2</sup></li> <li>•<sup>3</sup></li> </ul> <p style="text-align: right;"><b>3R</b></p>

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
5 (a)	<p><b>Ans: Points A (2, 6), B (8, 2) and C (6, -1) correctly plotted</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> 2 points correctly plotted</li> <li>•<sup>2</sup> 1 further point correctly plotted</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup></li> <li>•<sup>2</sup></li> </ul> <p style="text-align: right;"><b>2K</b></p>
(b)	<p><b>Ans: Point D (0, 3) correctly plotted</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> point D correctly plotted</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> (0, 3)</li> </ul> <p style="text-align: right;"><b>1R</b></p>
(c)	<p><b>Ans: Point of intersection (4, 2.5) plotted</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> both diagonals drawn <b>or</b> point of intersection clearly plotted</li> <li>•<sup>2</sup> coordinates of marked point stated correctly</li> </ul> 	<ul style="list-style-type: none"> <li>•<sup>1</sup> both diagonals drawn <b>or</b> point of intersection clearly plotted</li> <li>•<sup>2</sup> (4, 2.5)</li> </ul> <p style="text-align: right;"><b>2R</b></p>
<p>NOTES:</p> <p>In part (c)</p> <ul style="list-style-type: none"> <li>(i) For correct coordinates only <span style="float: right;">award 2/2</span></li> <li>(ii) Accept <math>2.5 \pm 0.2</math> units for the y-coordinate</li> </ul>		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
6	<b>Ans: <math>-17(^{\circ}\text{C})</math></b> • <sup>1</sup> subtract $26^{\circ}$ from $9^{\circ}$ • <sup>2</sup> correct subtraction	• <sup>1</sup> $9 - 26$ • <sup>2</sup> $-17(^{\circ}\text{C})$ <div style="text-align: right;"><b>2K</b></div>

NOTES:

(i)	<b>Final Answers</b>	<b>with working</b>	<b>without working</b>
	$-17$	$2/2$	$2/2$
	$17$	$1/2$	$0/2$

(ii) The use of a number line from 9 to  $-17$  is acceptable for the first mark

7	<b>Ans: 200 (grams)</b> • <sup>1</sup> knowing to divide 240 by 6 • <sup>2</sup> knowing to multiply answer to above by 5 <b>or</b> subtract 40 from 240 • <sup>3</sup> all calculations correct within a valid strategy (min. 2)	• <sup>1</sup> $240 \div 6 (= 40)$ • <sup>2</sup> $40 \times 5$ <b>or</b> $240 - 40$ • <sup>3</sup> $= 200$ (grams) <div style="text-align: right;"><b>3R</b></div>
---	--	--

NOTES:

(i)	<b>Final Answers</b>	<b>with working</b>	<b>without working</b>
	200 (grams)	$3/3$	$2/3$
	$288 (240 \times 6 \div 5)$	$1/3$	$0/3$
	$192 (240 - (240 \div 5))$	$1/3$	$0/3$
	$240 (240 \div 5 \times 5)$	$0/3$	$0/3$

(ii) Scaling up e.g. 5:1, 10:2, ..., 200:40 is a valid strategy

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
8 (a)	<p>Ans: <math display="block">\begin{array}{c cccc} 5 &amp; 3 &amp; 3 &amp; 4 &amp; 6 &amp; 8 \\ 6 &amp; 1 &amp; 2 &amp; 3 &amp; 5 &amp; 7 &amp; 8 \\ 7 &amp; 0 &amp; 4 &amp; 6 &amp; 6 &amp; &amp; \\ 8 &amp; 3 &amp; 4 &amp; 5 &amp; 8 &amp; &amp; \end{array}</math></p> <p style="text-align: center;">(n = 19    5   3 = 5.3)</p> <ul style="list-style-type: none"> <li>•<sup>1</sup> stem correct</li> <li>•<sup>2</sup> all leaves on correct level</li> <li>•<sup>3</sup> leaves ordered correctly</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup></li> <li>•<sup>2</sup></li> <li>•<sup>3</sup></li> </ul> <p style="text-align: right;"><b>3K</b></p>
(b)	<p>Ans: 6.7 (cm)</p> <ul style="list-style-type: none"> <li>•<sup>1</sup> median correctly identified</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 6.7 (cm)</li> </ul> <p style="text-align: right;"><b>1K</b></p>
<p>NOTES:</p> <p>In part (a) accept the use of commas or decimal points as bad form.</p>		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
9	<b>Ans: 143°</b> <ul style="list-style-type: none"> <li>•<sup>1</sup> using <math>\angle DAB = 34^\circ</math> to calculate <math>\angle ABD</math></li> <li>•<sup>2</sup> using <math>\angle ABC = 90^\circ</math> to calculate <math>\angle CBD</math></li> <li>•<sup>3</sup> correct subtraction of angles BCD and CBD from <math>180^\circ</math></li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\angle ABD = \frac{1}{2}(180 - 34)^\circ = 73^\circ</math></li> <li>•<sup>2</sup> <math>\angle CBD = 90 - 73 = 17^\circ</math></li> <li>•<sup>3</sup> <math>\angle BDC = 180 - (17 + 20) = 143^\circ</math></li> </ul> <p style="text-align: right;"><b>3R</b></p>

NOTES:

(i) **Alternative Strategy**

- |  |  |
|--|--|
| <ul style="list-style-type: none"> <li>•<sup>1</sup> using <math>\angle DAB = 34^\circ</math> to calculate <math>\angle ADB</math></li> <li>•<sup>2</sup> using <math>ABCD = 360^\circ</math> to calculate <math>\angle ADC</math> reflex</li> <li>•<sup>3</sup> correct subtraction of <math>\angle ADB</math> from <math>\angle ADC</math> reflex</li> </ul> | <ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\angle ADB = \frac{1}{2}(180 - 34)^\circ = 73^\circ</math></li> <li>•<sup>2</sup> <math>\angle ADC = 360 - (20 + 90 + 34) = 216^\circ</math></li> <li>•<sup>3</sup> <math>\angle BDC = 216 - 73 = 143^\circ</math></li> </ul> |
|--|--|

- |                                  |                            |                               |
|----------------------------------|----------------------------|-------------------------------|
| (ii) <b>Final Answer</b><br>143° | <b>with working</b><br>3/3 | <b>without working</b><br>2/3 |
|----------------------------------|----------------------------|-------------------------------|

(iii) Angles correctly marked on diagram may be accepted.

(iv) The final mark can be awarded for the correct subtraction of  $20^\circ$  and another angle from  $180^\circ$

**KU 15 marks**  
**RE 18 marks**

[END OF PAPER 1 MARKING INSTRUCTIONS]

2009 Mathematics SG – General 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><b>Ans: 42 (mph)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> correct substitution in correct formula</li> <li>•<sup>2</sup> appropriate time conversion</li> <li>•<sup>3</sup> correct calculation</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>s = 28/40</math> (miles/min)</li> <li>•<sup>2</sup> <math>= 0.7 \times 60</math></li> <li>•<sup>3</sup> <math>= 42</math> (mph)</li> </ul> <p style="text-align: right;"><b>3K</b></p>																																				
<p>NOTES:</p> <p>(i) <b>Alternative Strategy</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%;">•<sup>1</sup> Proportion statement</td> <td style="width: 50%;">•<sup>1</sup> 40 (mins) → 28 (miles)</td> </tr> <tr> <td>•<sup>2</sup> Scaling down</td> <td>•<sup>2</sup> 20 (mins) → 14 (miles)</td> </tr> <tr> <td>•<sup>3</sup> Correct answer</td> <td>•<sup>3</sup> 60 (mins) → 42 (miles)</td> </tr> </table> <p>(ii) <b>Final Answers</b></p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 30%; text-align: center;">with working</th> <th style="width: 30%; text-align: center;">without working</th> </tr> </thead> <tbody> <tr><td>42</td><td style="text-align: center;">3/3</td><td style="text-align: center;">2/3</td></tr> <tr><td>42·...</td><td style="text-align: center;">3/3</td><td style="text-align: center;">2/3</td></tr> <tr><td>41·... (28 ÷ 0.67)</td><td style="text-align: center;">3/3</td><td style="text-align: center;">2/3</td></tr> <tr><td>40 (28 ÷ 0.7)</td><td style="text-align: center;">3/3</td><td style="text-align: center;">0/3</td></tr> <tr><td>46.66 ... (28 ÷ 0.6)</td><td style="text-align: center;">2/3</td><td style="text-align: center;">0/3</td></tr> <tr><td>85.7 (40 ÷ 28 × 60)</td><td style="text-align: center;">2/3</td><td style="text-align: center;">0/3</td></tr> <tr><td>18.67 (40 × 28 ÷ 60)</td><td style="text-align: center;">2/3</td><td style="text-align: center;">0/3</td></tr> <tr><td>11.67 (28000 ÷ 2400)</td><td style="text-align: center;">1/3</td><td style="text-align: center;">0/3</td></tr> <tr><td>70 (28 ÷ 40 × 100)</td><td style="text-align: center;">1/3</td><td style="text-align: center;">0/3</td></tr> </tbody> </table>			• <sup>1</sup> Proportion statement	• <sup>1</sup> 40 (mins) → 28 (miles)	• <sup>2</sup> Scaling down	• <sup>2</sup> 20 (mins) → 14 (miles)	• <sup>3</sup> Correct answer	• <sup>3</sup> 60 (mins) → 42 (miles)		with working	without working	42	3/3	2/3	42·...	3/3	2/3	41·... (28 ÷ 0.67)	3/3	2/3	40 (28 ÷ 0.7)	3/3	0/3	46.66 ... (28 ÷ 0.6)	2/3	0/3	85.7 (40 ÷ 28 × 60)	2/3	0/3	18.67 (40 × 28 ÷ 60)	2/3	0/3	11.67 (28000 ÷ 2400)	1/3	0/3	70 (28 ÷ 40 × 100)	1/3	0/3
• <sup>1</sup> Proportion statement	• <sup>1</sup> 40 (mins) → 28 (miles)																																					
• <sup>2</sup> Scaling down	• <sup>2</sup> 20 (mins) → 14 (miles)																																					
• <sup>3</sup> Correct answer	• <sup>3</sup> 60 (mins) → 42 (miles)																																					
	with working	without working																																				
42	3/3	2/3																																				
42·...	3/3	2/3																																				
41·... (28 ÷ 0.67)	3/3	2/3																																				
40 (28 ÷ 0.7)	3/3	0/3																																				
46.66 ... (28 ÷ 0.6)	2/3	0/3																																				
85.7 (40 ÷ 28 × 60)	2/3	0/3																																				
18.67 (40 × 28 ÷ 60)	2/3	0/3																																				
11.67 (28000 ÷ 2400)	1/3	0/3																																				
70 (28 ÷ 40 × 100)	1/3	0/3																																				
2	<p><b>Ans: (£) 56.80</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find the cost of 19 return journeys</li> <li>•<sup>2</sup> knowing to subtract £264.30 from answer to above</li> <li>•<sup>3</sup> correct multiplication AND subtraction</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>19 \times 16.90 (= 321.10)</math></li> <li>•<sup>2</sup> <math>321.10 - 264.30</math></li> <li>•<sup>3</sup> <math>= (£) 56.80</math></li> </ul> <p style="text-align: right;"><b>3R</b></p>																																				
<p>NOTES:</p> <table style="width: 100%; border: none;"> <thead> <tr> <th style="width: 40%;"></th> <th style="width: 30%; text-align: center;">with working</th> <th style="width: 30%; text-align: center;">without working</th> </tr> </thead> <tbody> <tr><td><b>Final Answer</b></td><td></td><td></td></tr> <tr><td>56.80</td><td style="text-align: center;">3/3</td><td style="text-align: center;">2/3</td></tr> <tr><td>56.8</td><td style="text-align: center;">2/3</td><td style="text-align: center;">1/3</td></tr> </tbody> </table>				with working	without working	<b>Final Answer</b>			56.80	3/3	2/3	56.8	2/3	1/3																								
	with working	without working																																				
<b>Final Answer</b>																																						
56.80	3/3	2/3																																				
56.8	2/3	1/3																																				

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
3	<p><b>Ans: 641 (cm<sup>2</sup>)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> calculate area of circle</li> <li>•<sup>2</sup> calculate area of semi-circle</li> <li>•<sup>3</sup> calculate area of 1/3 of semi-circle</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>A_c = \pi \times 35^2 = 3846.5</math></li> <li>•<sup>2</sup> <math>A_{sc} = \frac{1}{2} \times 3846.5 = 1923.25</math></li> <li>•<sup>3</sup> <math>A = \frac{1}{3} \times 1923.25 = 641 \text{ (cm}^2\text{)}</math></li> </ul> <p style="text-align: right;"><b>3K</b></p>

NOTES:

(i)	Final Answers	with working	without working
	641	3/3	2/3
	1282.2 (3846.5 ÷ 3)	2/3	1/3
	2013 ((3.14 × 35) <sup>2</sup> ÷ 6)	2/3	1/3
	36.6 (3.14 × 70 ÷ 6)	2/3	1/3
	18.3 (3.14 × 35 ÷ 6)	2/3	1/3
	70 or 35 divided by 2, 3 or 6	1/3	0/3
(ii)	Accept variations in the use of $\pi$ (3.14...)		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																
4 (a)	<b>Ans: 2h 15 min</b> • <sup>1</sup> time calculation	• <sup>1</sup> 2h 15 min  <b>1K</b>																
(b)	<b>Ans: 2255</b> • <sup>1</sup> knowing to subtract 2h 15 min from 0110 • <sup>2</sup> correct time calculation (over midnight)	• <sup>1</sup> 0110 – 2h 15 min • <sup>2</sup> 2255  <b>2R</b>																
<p>NOTES:</p> <p>In part (b)</p> <p>(i) <b>Alternative Strategy</b></p> <table border="0" style="width: 100%;"> <tr> <td style="width: 50%;">•<sup>1</sup> Knowing to subtract 2005 from 0110</td> <td style="width: 50%;">•<sup>1</sup> 0110 – 2005 Time difference = 5hrs 5 min</td> </tr> <tr> <td>•<sup>2</sup> Correct time calculation</td> <td>•<sup>2</sup> 1750 + 5 hrs 5 min → 2255</td> </tr> </table> <p>(ii) <b>Final Answers</b></p> <table border="0" style="width: 100%;"> <thead> <tr> <th style="width: 33%;"></th> <th style="width: 33%; text-align: center;"><b>with working</b></th> <th style="width: 33%; text-align: center;"><b>without working</b></th> </tr> </thead> <tbody> <tr> <td>2255</td> <td style="text-align: center;">2/2</td> <td style="text-align: center;">2/2</td> </tr> <tr> <td>1055</td> <td style="text-align: center;">2/2</td> <td style="text-align: center;">2/2</td> </tr> <tr> <td>Five to eleven</td> <td style="text-align: center;">2/2</td> <td style="text-align: center;">2/2</td> </tr> </tbody> </table> <p>(iii) Candidates who assume 100 minutes in 1 hour in part (a), may gain full credit in part (b)</p>			• <sup>1</sup> Knowing to subtract 2005 from 0110	• <sup>1</sup> 0110 – 2005 Time difference = 5hrs 5 min	• <sup>2</sup> Correct time calculation	• <sup>2</sup> 1750 + 5 hrs 5 min → 2255		<b>with working</b>	<b>without working</b>	2255	2/2	2/2	1055	2/2	2/2	Five to eleven	2/2	2/2
• <sup>1</sup> Knowing to subtract 2005 from 0110	• <sup>1</sup> 0110 – 2005 Time difference = 5hrs 5 min																	
• <sup>2</sup> Correct time calculation	• <sup>2</sup> 1750 + 5 hrs 5 min → 2255																	
	<b>with working</b>	<b>without working</b>																
2255	2/2	2/2																
1055	2/2	2/2																
Five to eleven	2/2	2/2																

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
5 (a)	<b>Ans: <math>3(2c - 5d)</math></b> • <sup>1</sup> correct common factor • <sup>2</sup> correct factorisation	• <sup>1</sup> $3(\dots)$ • <sup>2</sup> $(2c - 5d)$ <div style="text-align: right;"><b>2K</b></div>
(b)	<b>Ans: <math>a + 15</math></b> • <sup>1</sup> multiplication of 1st bracket • <sup>2</sup> multiplication of 2nd bracket • <sup>3</sup> terms collected	• <sup>1</sup> $5a + 5$ • <sup>2</sup> $10 - 4a$ • <sup>3</sup> $a + 15$ <div style="text-align: right;"><b>3K</b></div>
<p>NOTES:</p> <p>(i) Where a candidate creates then tries to solve an equation the final mark cannot be awarded</p> <p>(ii) In part (b), for the correct answer without working <span style="float: right;">award 2/3</span></p>		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																														
6 (a)	<p>Ans:</p> <table border="1" data-bbox="363 376 1273 589"> <thead> <tr> <th colspan="4">Selections</th> <th>Cost</th> </tr> </thead> <tbody> <tr> <td>Drama</td> <td>Sport</td> <td>Movies</td> <td>Music</td> <td>52</td> </tr> <tr> <td>Drama</td> <td>Sport</td> <td>Movies</td> <td>Kids</td> <td>54</td> </tr> <tr> <td>Drama</td> <td>Sport</td> <td>Kids</td> <td>Music</td> <td>49</td> </tr> <tr> <td>Drama</td> <td>Movies</td> <td>Kids</td> <td>Music</td> <td>44</td> </tr> <tr> <td>Sport</td> <td>Movies</td> <td>Kids</td> <td>Music</td> <td>57</td> </tr> </tbody> </table> <ul style="list-style-type: none"> <li>•<sup>1</sup> one selection and cost correct</li> <li>•<sup>2</sup> a further two selections and costs correct</li> <li>•<sup>3</sup> one further selection and cost correct</li> </ul>	Selections				Cost	Drama	Sport	Movies	Music	52	Drama	Sport	Movies	Kids	54	Drama	Sport	Kids	Music	49	Drama	Movies	Kids	Music	44	Sport	Movies	Kids	Music	57	<ul style="list-style-type: none"> <li>•<sup>1</sup></li> <li>•<sup>2</sup></li> <li>•<sup>3</sup></li> </ul> <p style="text-align: right;"><b>3R</b></p>
Selections				Cost																												
Drama	Sport	Movies	Music	52																												
Drama	Sport	Movies	Kids	54																												
Drama	Sport	Kids	Music	49																												
Drama	Movies	Kids	Music	44																												
Sport	Movies	Kids	Music	57																												
(b)	<p>Ans: <b>Sport, Movies, Kids, Music (£57)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> correct selection of 4 channel mixes</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> Sport, Movies, Kids, Music (£57)</li> </ul> <p style="text-align: right;"><b>1R</b></p>																														
<p>NOTES:</p> <p>Marking aid:</p> <table border="1" data-bbox="432 1397 818 1585"> <thead> <tr> <th>Cost</th> <th>No</th> </tr> </thead> <tbody> <tr> <td>£57</td> <td>Drama</td> </tr> <tr> <td>£54</td> <td>Music</td> </tr> <tr> <td>£49</td> <td>Movies</td> </tr> <tr> <td>£44</td> <td>Sport</td> </tr> </tbody> </table>			Cost	No	£57	Drama	£54	Music	£49	Movies	£44	Sport																				
Cost	No																															
£57	Drama																															
£54	Music																															
£49	Movies																															
£44	Sport																															

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark															
7	<b>Ans: 3·3 (hrs)</b> • <sup>1</sup> calculate $fx$ • <sup>2</sup> add $fx$ column • <sup>3</sup> correctly divide answer to above by 76 • <sup>4</sup> correct rounding	• <sup>1</sup> 16, 24, 54, 44, 40, 36, 35 • <sup>2</sup> 249 • <sup>3</sup> 3·2763 ... • <sup>4</sup> 3·3 (hrs) <div style="text-align: right;"><b>4K</b></div>															
NOTES: (i) For the correct answer of 3·3 (hrs) without working the 3 <sup>rd</sup> and 4 <sup>th</sup> marks can be awarded (ii) For $249 \div 7$ leading to 35·6 or $76 \div 7$ leading to 10·9 award the 4 <sup>th</sup> mark for correct rounding																	
8	<b>Ans: 3·4 (m)</b> • <sup>1</sup> knowing to half base • <sup>2</sup> knowing to use Pythagoras • <sup>3</sup> correct Pythagoras calculation • <sup>4</sup> correct square root of above	• <sup>1</sup> $\frac{1}{2} \times 2\cdot4 = 1\cdot2$ • <sup>2</sup> $3\cdot6^2 = h^2 + 1\cdot2^2$ • <sup>3</sup> $h^2 = 11\cdot52$ • <sup>4</sup> $h = 3\cdot4$ (m) <div style="text-align: right;"><b>4R</b></div>															
NOTES: <table style="width: 100%; border: none;"> <thead> <tr> <th style="text-align: left;">Final Answers</th> <th style="text-align: center;">with working</th> <th style="text-align: center;">without working</th> </tr> </thead> <tbody> <tr> <td>3·4</td> <td style="text-align: center;">4/4</td> <td style="text-align: center;">2/4</td> </tr> <tr> <td>3·8 (<math>3\cdot6^2 + 1\cdot2^2</math>)</td> <td style="text-align: center;">3/4</td> <td style="text-align: center;">0/4</td> </tr> <tr> <td>2·7 (<math>3\cdot6^2 - 2\cdot4^2</math>)</td> <td style="text-align: center;">3/4</td> <td style="text-align: center;">0/4</td> </tr> <tr> <td>4·3 (<math>3\cdot6^2 + 2\cdot4^2</math>)</td> <td style="text-align: center;">2/4</td> <td style="text-align: center;">0/4</td> </tr> </tbody> </table>			Final Answers	with working	without working	3·4	4/4	2/4	3·8 ( $3\cdot6^2 + 1\cdot2^2$ )	3/4	0/4	2·7 ( $3\cdot6^2 - 2\cdot4^2$ )	3/4	0/4	4·3 ( $3\cdot6^2 + 2\cdot4^2$ )	2/4	0/4
Final Answers	with working	without working															
3·4	4/4	2/4															
3·8 ( $3\cdot6^2 + 1\cdot2^2$ )	3/4	0/4															
2·7 ( $3\cdot6^2 - 2\cdot4^2$ )	3/4	0/4															
4·3 ( $3\cdot6^2 + 2\cdot4^2$ )	2/4	0/4															

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
9	<b>Ans: (£) 22.25</b> <ul style="list-style-type: none"> <li>•<sup>1</sup> cost of Margherita and Hot Spicy</li> <li>•<sup>2</sup> cost of two Vegetarian</li> <li>•<sup>3</sup> correct total</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 5.15, 5.00 (5.15 + 5.00 = 10.15)</li> <li>•<sup>2</sup> 2 × 6.05 (= 12.10)</li> <li>•<sup>3</sup> (£) 22.25</li> </ul> <p style="text-align: right;"><b>3K</b></p>

NOTES:

Final Answers	with working	without working
22.25	3/3	2/3
16.2(0) (10.15 + 6.05)	2/3	2/3
17.1(0) (12.10 + 5)	2/3	2/3
17.25 (12.10 + 5.15)	2/3	2/3
11.2(0) (5.15 + 6.05)	1/3	1/3
11.05 (5.00 + 6.05)	1/3	1/3

10	<b>Ans: (£)74.4(0)</b> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to calculate the interest for <b>either</b> bank</li> <li>•<sup>2</sup> knowing to find the difference in the interest</li> <li>•<sup>3</sup> all calculations correct within a valid strategy</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 0.025 × 6200 (= 155.00) <b>or</b> 0.037 × 6200 (= 229.40) or equivalent</li> <li>•<sup>2</sup> 229.40 – 155.00 or equivalent</li> <li>•<sup>3</sup> 229.40 - 155.00 = (£)74.4(0)</li> </ul> <p style="text-align: right;"><b>3R</b></p>
----	--	--

NOTES:

(i)	<b>Alternative Strategy</b> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to calculate the percentage difference</li> <li>•<sup>2</sup> knowing to calculate the interest</li> <li>•<sup>3</sup> all calculations correct within a valid strategy</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 3.7 – 2.5 (= 1.2)</li> <li>•<sup>2</sup> 0.012 × 6200</li> <li>•<sup>3</sup> (£) 74.4(0)</li> </ul>
-----	--	--

(ii)	<b>Final Answers</b> 74.4(0)	<b>with working</b> 3/3	<b>without working</b> 2/3
------	---------------------------------	----------------------------	-------------------------------

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
11	<b>Ans: 8·45</b> • <sup>1</sup> for a valid trig ratio • <sup>2</sup> correct rearranging • <sup>3</sup> correct trig calculation	• <sup>1</sup> $\text{Cos } 65^\circ = x/20$ • <sup>2</sup> $x = 20 \times \text{Cos } 65^\circ$ • <sup>3</sup> 8·45 <div style="text-align: right;"><b>3K</b></div>

NOTES:

Final Answers	with working	without working
8·45	3/3	2/3
10·4 [GRAD]	3/3	2/3
(-)11·2 [RAD]	3/3	2/3
42·9 ( $20 \times \text{Tan } 65^\circ$ )	2/3	0/3
18·1 ( $20 \times \text{Sin } 65^\circ$ )	2/3	0/3

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
12	<p><b>Ans: Yes, 3m<sup>3</sup> left over</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to change depth to metres</li> <li>•<sup>2</sup> calculate the volume of the cuboid</li> <li>•<sup>3</sup> valid statement with reason</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> depth = 0.12m</li> <li>•<sup>2</sup> volume = 0.12 × 225 = 27</li> <li>•<sup>3</sup> Yes, there will be 3m<sup>3</sup> left over</li> </ul> <p style="text-align: right;"><b>3R</b></p>

NOTES:

(i) **Alternative Strategy – A**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find the height</li> <li>•<sup>2</sup> correct calculation</li> <li>•<sup>3</sup> valid statement with reason</li> </ul> | <ul style="list-style-type: none"> <li>•<sup>1</sup> 30 ÷ 225 (= 0.133)</li> <li>•<sup>2</sup> 0.133m = 13cm</li> <li>•<sup>3</sup> yes 13cm &gt; 12cm</li> </ul> |
|--|---|

**Alternative Strategy – B**

- |  |   |
|--|---|
| <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find area</li> <li>•<sup>2</sup> correct calculation</li> <li>•<sup>3</sup> valid statement with reason</li> </ul> | <ul style="list-style-type: none"> <li>•<sup>1</sup> 30 ÷ 0.12 (= 250)</li> <li>•<sup>2</sup> 250m<sup>2</sup></li> <li>•<sup>3</sup> yes 250m<sup>2</sup> &gt; 225m<sup>2</sup></li> </ul> |
|--|---|

(ii) For correct answer without working award 2/3

(iii) Valid statements include: comparing volume with volume, height with height, etc

(iv) The reason must include a comparison or an implied comparison eg using ‘only’, ‘more than’ or ‘less than’

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																		
13	<b>Ans: Position shown and labelled</b> • <sup>1</sup> correct angle ( $\pm 2^\circ$ ) • <sup>2</sup> correct distance ( $\pm 2$ mm) • <sup>3</sup> wind farm labelled on diagram at correct angle or correct distance	• <sup>1</sup> • <sup>2</sup> • <sup>3</sup> <b>3K</b>																		
14	<b>Ans: 5 (cm)</b> • <sup>1</sup> knowing to find area of 1 square • <sup>2</sup> knowing to find length of side • <sup>3</sup> both calculations correct	• <sup>1</sup> $150 \div 6 (= 25)$ • <sup>2</sup> $\sqrt{25}$ • <sup>3</sup> 5 (cm) <b>3R</b>																		
NOTES:  <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <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>5</td> <td>3/3</td> <td>2/3</td> </tr> <tr> <td>2.04 (<math>\sqrt{150} \div 6</math>)</td> <td>2/3</td> <td>0/3</td> </tr> <tr> <td>5.3 (<math>1 \times 1 \times 1 = 150</math>)</td> <td>2/3</td> <td>0/3</td> </tr> <tr> <td>12.2 (<math>\sqrt{150}</math>)</td> <td>1/3</td> <td>0/3</td> </tr> <tr> <td>6.25 (<math>25 \div 4</math>)</td> <td>1/3</td> <td>0/3</td> </tr> </tbody> </table>			Final Answers	with working	without working	5	3/3	2/3	2.04 ( $\sqrt{150} \div 6$ )	2/3	0/3	5.3 ( $1 \times 1 \times 1 = 150$ )	2/3	0/3	12.2 ( $\sqrt{150}$ )	1/3	0/3	6.25 ( $25 \div 4$ )	1/3	0/3
Final Answers	with working	without working																		
5	3/3	2/3																		
2.04 ( $\sqrt{150} \div 6$ )	2/3	0/3																		
5.3 ( $1 \times 1 \times 1 = 150$ )	2/3	0/3																		
12.2 ( $\sqrt{150}$ )	1/3	0/3																		
6.25 ( $25 \div 4$ )	1/3	0/3																		

**KU 25 marks**  
**RE 22 marks**

<b>FINAL</b>	<b>KU 40 marks</b>
<b>TOTALS</b>	<b>RE 40 marks</b>

[END OF PAPER 2 MARKING INSTRUCTIONS]