



**2011 Mathematics**

**Standard Grade – General**

**Paper 1 and Paper 2**

**Finalised Marking Instructions**

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## 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, where a number has been erroneously transcribed from the examination question, 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.



Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark									
2	<b>Ans: <math>2.54 \times 10^{-3}</math></b> • <sup>1</sup> correct positioning of decimal point • <sup>2</sup> correct power of 10 in a valid expression	•1 2.54 •2 $2.54 \times 10^{-3}$ <div style="text-align: right;"><b>2K</b></div>									
<p>NOTES:</p> <p>(i) The second mark can be awarded for a consistent power of 10, eg <math>25.4 \times 10^{-4}</math></p> <p>(ii) <table style="display: inline-table; vertical-align: middle;"> <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><math>2.54 \times 10^{-3}</math></td> <td style="text-align: center;">2/2</td> <td style="text-align: center;">2/2</td> </tr> <tr> <td><math>2.5 \times 10^{-3}</math></td> <td style="text-align: center;">1/2</td> <td style="text-align: center;">1/2</td> </tr> </tbody> </table> </p>			Final answers	with working	without working	$2.54 \times 10^{-3}$	2/2	2/2	$2.5 \times 10^{-3}$	1/2	1/2
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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="400 349 852 416"> <tr> <td>1</td> <td>2</td> <td>3</td> <td>4</td> <td></td> <td>10</td> </tr> <tr> <td>6</td> <td>10</td> <td>14</td> <td>18</td> <td></td> <td>42</td> </tr> </table> <ul style="list-style-type: none"> <li>•<sup>1</sup> any two correct number of lengths</li> <li>•<sup>2</sup> a further correct number of lengths</li> </ul>	1	2	3	4		10	6	10	14	18		42	<ul style="list-style-type: none"> <li>•1 any two from 14, 18, 42</li> <li>•2 remaining one from 14, 18, 42</li> </ul> <p style="text-align: right;"><b>2R</b></p>
1	2	3	4		10									
6	10	14	18		42									
(b)	<p><b>Ans: <math>g = 4s + 2</math></b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup>•<sup>2</sup> correct formula</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup>•<sup>2</sup> <math>g = 4s + 2</math></li> </ul> <p style="text-align: right;"><b>2R</b></p>												
(c)	<p><b>Ans: 16</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> correct strategy to find <math>s</math></li> <li>•<sup>2</sup> correct solution</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>66 = 4s + 2</math></li> <li>•<sup>2</sup> <math>s = 16</math></li> </ul> <p style="text-align: right;"><b>2R</b></p>												
<p>NOTES:</p> <p>In part (b)</p> <p>(i) For an answer of (<math>=</math>) <math>4s + 2</math> <span style="float: right;">award 1/2</span></p> <p>(ii) Do not penalise bad form, eg <math>g = 6s - 2(s - 1)</math></p> <p>(iii) A formula in words is not acceptable</p> <p>(iv) For <math>s = 4g + 2</math> <span style="float: right;">award 0/2</span></p> <p>In part (c)</p> <p>(v) The solution may be obtained from extending the table</p> <p>(vi) For <math>66 \div 4 - 2</math> leading to 14, 14.5, 15 <span style="float: right;">award 1/2</span></p> <p>(vii) For a final answer of 16 without working <span style="float: right;">award 1/2</span></p>														



Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark									
5	<p><b>Ans: 72 (cm<sup>2</sup>)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find length of rectangle B</li> <li>•<sup>2</sup> knowing to find length of rectangle A</li> <li>•<sup>3</sup> know how to find area of rectangle A</li> <li>•<sup>4</sup> all calculations correct</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>10 \div 2 (= 5)</math></li> <li>•<sup>2</sup> <math>14 - 5 (= 9)</math></li> <li>•<sup>3</sup> <math>9 \times 8</math></li> <li>•<sup>4</sup> <math>72 \text{ (cm}^2\text{)}</math></li> </ul> <p style="text-align: right;"><b>4R</b></p>									
<p>NOTES:</p> <p>(i) <b>Alternative strategy:</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find length of rectangle B      •<sup>1</sup> <math>10 \div 2 (= 5)</math></li> <li>•<sup>2</sup> knowing to find area of rectangle C      •<sup>2</sup> <math>5 \times 6 (= 30)</math></li> <li>•<sup>3</sup> knowing to find area of large rectangle      •<sup>3</sup> <math>14 \times 8 (= 112)</math></li> <li>•<sup>4</sup> find area of rectangle A and all calculations correct      •<sup>4</sup> <math>112 - 40 = 72 \text{ (cm}^2\text{)}</math></li> </ul> <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;"><b>with working</b></th> <th style="width: 30%; text-align: center;"><b>without working</b></th> </tr> </thead> <tbody> <tr> <td>72</td> <td style="text-align: center;">4/4</td> <td style="text-align: center;">3/4</td> </tr> <tr> <td>38 (from perimeter)</td> <td style="text-align: center;">2/4</td> <td style="text-align: center;">0/4</td> </tr> </tbody> </table>				<b>with working</b>	<b>without working</b>	72	4/4	3/4	38 (from perimeter)	2/4	0/4
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72	4/4	3/4									
38 (from perimeter)	2/4	0/4									
6	<p><b>Ans: -14(°C)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> correct strategy</li> <li>•<sup>2</sup> correct calculation</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>32 - 46</math></li> <li>•<sup>2</sup> <math>-14(^{\circ}\text{C})</math></li> </ul> <p style="text-align: right;"><b>2K</b></p>									
<p>NOTES:</p> <p>(i) <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;"><b>with working</b></th> <th style="width: 30%; text-align: center;"><b>without working</b></th> </tr> </thead> <tbody> <tr> <td>-14</td> <td style="text-align: center;">2/2</td> <td style="text-align: center;">2/2</td> </tr> <tr> <td>14</td> <td style="text-align: center;">1/2</td> <td style="text-align: center;">0/2</td> </tr> </tbody> </table> <p>(ii) The use of a number line from 32 to -14 is acceptable for the first mark</p>				<b>with working</b>	<b>without working</b>	-14	2/2	2/2	14	1/2	0/2
	<b>with working</b>	<b>without working</b>									
-14	2/2	2/2									
14	1/2	0/2									

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark
7	<p><b>Ans: 95(°)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> use properties of isosceles triangle to find <math>\angle BDC</math></li> <li>•<sup>2</sup> use properties of isosceles triangle to find <math>\angle ADB</math></li> <li>•<sup>3</sup> correct addition of angles</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>30^\circ</math></li> <li>•<sup>2</sup> <math>(180^\circ - 50^\circ) \div 2 = 65^\circ</math></li> <li>•<sup>3</sup> <math>65^\circ + 30^\circ = 95^\circ</math></li> </ul> <p style="text-align: right;"><b>3R</b></p>
<p>NOTES:</p> <p>(i) <b>Alternative strategy:</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> use <math>\angle BCA = \angle DCA</math> to find <math>\angle DCA</math></li> <li>•<sup>2</sup> use <math>\angle CAB = \angle CAD</math> to find <math>\angle CAD</math></li> <li>•<sup>3</sup> correct calculation to find <math>\angle CDA</math></li> </ul> <p>(ii) For a correct final answer without working <span style="float: right;">award 2/3</span></p>		
8	<p><b>Ans: (£) 8</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> cost of family ticket</li> <li>•<sup>2</sup> cost of 2 adults &amp; 2 children</li> <li>•<sup>3</sup> correct calculation</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 42</li> <li>•<sup>2</sup> <math>2 \times 13.50 + 2 \times 11.50 = 50</math></li> <li>•<sup>3</sup> <math>50 - 42 = (£)8</math></li> </ul> <p style="text-align: right;"><b>3K</b></p>
<p>NOTES:</p> <p style="text-align: center;">For a final answer of (£)8 without working <span style="float: right;">award 1/3</span></p>		

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																
9	<b>Ans: 12.5 (cm)</b> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find 1 unit of measure</li> <li>•<sup>2</sup> knowing to find length of large nail</li> <li>•<sup>3</sup> calculations correct within a valid strategy</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>7.5 \div 3 (= 2.5)</math></li> <li>•<sup>2</sup> <math>2.5 \times 5</math></li> <li>•<sup>3</sup> 12.5 (cm)</li> </ul> <p style="text-align: right;"><b>3R</b></p>																
<p>NOTES:</p> <table style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 10%;"></th> <th style="width: 35%; text-align: left;">Final answers</th> <th style="width: 25%; text-align: center;">with working</th> <th style="width: 30%; text-align: right;">without working</th> </tr> </thead> <tbody> <tr> <td>(i)</td> <td>12.5</td> <td style="text-align: center;">3/3</td> <td style="text-align: right;">1/3</td> </tr> <tr> <td></td> <td>4.5 (<math>7.5 \div 5 \times 3</math>)</td> <td style="text-align: center;">1/3</td> <td style="text-align: right;">0/3</td> </tr> <tr> <td>(ii)</td> <td colspan="3">Strategy may be <math>7.5 \times 5 \div 3</math></td> </tr> </tbody> </table>				Final answers	with working	without working	(i)	12.5	3/3	1/3		4.5 ( $7.5 \div 5 \times 3$ )	1/3	0/3	(ii)	Strategy may be $7.5 \times 5 \div 3$		
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**KU 16 marks**  
**RE 16 marks**

[END OF PAPER 1 MARKING INSTRUCTIONS]

**2011 Mathematics SG – General Level – Paper 2**

**Marking Instructions**

Award marks in whole numbers only

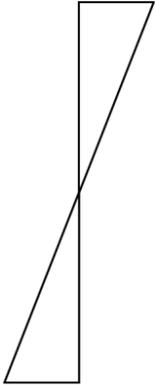
Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																												
<b>1</b>	<p><b>Ans: (£) 810</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> correct use or conversion of percentage</li> <li>•<sup>2</sup> correct annual interest</li> <li>•<sup>3</sup> correct monthly interest</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>0.045 = 4.5/100</math></li> <li>•<sup>2</sup> <math>0.045 \times 216\,000 = 9720</math></li> <li>•<sup>3</sup> <math>9720 \div 12 = (\pounds)810</math></li> </ul> <p style="text-align: right;"><b>3K</b></p>																												
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2 (a)	<b>Ans: 4/10 or equivalent</b> • <sup>1</sup> correct probability	• <sup>1</sup> 4/10 or equivalent  <b>1K</b>																					
(b)	<b>Ans: 10/13 or equivalent</b> • <sup>1</sup> correct new total of cubes • <sup>2</sup> correct probability	• <sup>1</sup> $10 + 3 = 13$ • <sup>2</sup> 10/13 or equivalent  <b>2R</b>																					
<p>NOTES:</p> <p>In parts (a) and (b)</p> <p>(i) Accept variations in language e.g. 4:10; 4 out of 10; 4 to 10</p> <p>In part (b)</p> <p>(i) For a final answer of 10/13 without working <span style="float: right;">award 2/2</span></p> <p>(ii) For an answer of 9/12 (where cube is not replaced) <span style="float: right;">award 1/2</span></p> <p>(iii) For an answer of 3/4 without working <span style="float: right;">award 0/2</span></p>																							
3	<b>Ans: (£) 20·11</b> • <sup>1</sup> correct subtraction • <sup>2</sup> correct division • <sup>3</sup> correct communication of money	• <sup>1</sup> $600 - 565 = 35$ • <sup>2</sup> $35 \div 1.74 = 20.1149\dots$ • <sup>3</sup> (£)20.11  <b>3K</b>																					
<p>NOTES:</p> <table style="width: 100%; border-collapse: collapse;"> <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>20·11</td> <td style="text-align: center;">3/3</td> <td style="text-align: center;">2/3</td> </tr> <tr> <td>20·1</td> <td style="text-align: center;">2/3</td> <td style="text-align: center;">1/3</td> </tr> <tr> <td>20</td> <td style="text-align: center;">2/3</td> <td style="text-align: center;">1/3</td> </tr> <tr> <td>60·90 (<math>35 \times 1.74</math>)</td> <td style="text-align: center;">2/3</td> <td style="text-align: center;">0/3</td> </tr> <tr> <td>344·83 (<math>600 \div 1.74</math>)</td> <td style="text-align: center;">2/3</td> <td style="text-align: center;">0/3</td> </tr> <tr> <td>324·71 (<math>565 \div 1.74</math>)</td> <td style="text-align: center;">2/3</td> <td style="text-align: center;">0/3</td> </tr> </tbody> </table>			Final answers	with working	without working	20·11	3/3	2/3	20·1	2/3	1/3	20	2/3	1/3	60·90 ( $35 \times 1.74$ )	2/3	0/3	344·83 ( $600 \div 1.74$ )	2/3	0/3	324·71 ( $565 \div 1.74$ )	2/3	0/3
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Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark						
6 (a)	<b>Ans: <math>6(3 + 2t)</math></b> • <sup>1</sup> highest common factor • <sup>2</sup> 2 <sup>nd</sup> factor correct	• <sup>1</sup> $6( \quad )$ • <sup>2</sup> $(3 + 2t)$  <b>2K</b>						
(b)	<b>Ans: <math>m = 10</math></b> • <sup>1</sup> number terms gathered correctly • <sup>2</sup> letter terms gathered correctly • <sup>3</sup> correct solution	• <sup>1</sup> 40 • <sup>2</sup> $4m$ • <sup>3</sup> $m = 10$  <b>3K</b>						
<p>NOTES:</p> <p>In part (a):</p> <p>(i) <b>Final answers</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 60%;"><math>6(3 + 2t)</math></td> <td style="text-align: right;">award 2/2</td> </tr> <tr> <td><math>2(9 + 6t)</math></td> <td style="text-align: right;">award 1/2</td> </tr> <tr> <td><math>3(6 + 4t)</math></td> <td style="text-align: right;">award 1/2</td> </tr> </table> <p>(ii) In part (b) for <math>m = 10</math> without algebraic working <span style="float: right;">award 0/3</span></p>			$6(3 + 2t)$	award 2/2	$2(9 + 6t)$	award 1/2	$3(6 + 4t)$	award 1/2
$6(3 + 2t)$	award 2/2							
$2(9 + 6t)$	award 1/2							
$3(6 + 4t)$	award 1/2							

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark				
7	<p><b>Ans: No, only 10.4 hours available and 11 hours required</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> calculate storage space remaining</li> <li>•<sup>2</sup> calculate time needed for series</li> <li>•<sup>3</sup> correctly convert to same units</li> <li>•<sup>4</sup> correct conclusion with reason within a valid strategy</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>0.13 \times 80 = 10.4</math> (hours)</li> <li>•<sup>2</sup> <math>12 \times 55 = 660</math> (minutes)</li> <li>•<sup>3</sup> 11 (hours) or 624 (minutes)</li> <li>•<sup>4</sup> No, only 10.4 hours available and 11 hours required</li> </ul> <p style="text-align: right;"><b>4R</b></p>				
<p>NOTES:</p> <p>(i) <b>Alternative strategies:</b></p> <table style="width: 100%; border: none;"> <tr> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> <li>•<sup>1</sup> used space</li> <li>•<sup>2</sup> add time for series</li> <li>•<sup>3</sup> convert to hours</li> <li>•<sup>4</sup> correct conclusion with reason within a valid strategy</li> </ul> </td> <td style="width: 50%; vertical-align: top;"> <ul style="list-style-type: none"> <li>•<sup>1</sup> <math>0.87 \times 80 = 69.6</math> hours = 4176 (mins)</li> <li>•<sup>2</sup> <math>12 \times 55 + 4176 = 4836</math> (mins)</li> <li>•<sup>3</sup> <math>4836 \div 60 = 80.6</math> (hours)</li> <li>•<sup>4</sup> No, a further 0.6 hours is required</li> </ul> </td> </tr> <tr> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>•<sup>1</sup> calculate time needed for series</li> <li>•<sup>2</sup> correctly convert to hours</li> <li>•<sup>3</sup> calculate storage space needed</li> <li>•<sup>4</sup> correct conclusion with reason within a valid strategy</li> </ul> </td> <td style="vertical-align: top;"> <ul style="list-style-type: none"> <li>•<sup>1</sup> <math>12 \times 55 = 660</math> minutes</li> <li>•<sup>2</sup> 11 hours</li> <li>•<sup>3</sup> <math>11 \div 80 \times 100 = 13.75\%</math></li> <li>•<sup>4</sup> No, 13% storage space remains and she needs 13.75%</li> </ul> </td> </tr> </table> <p>(ii) For a correct final answer and correct reason without working <span style="float: right;">award 2/4</span></p> <p>(iii) The reason must include a comparison or an implied comparison eg using ‘only’, ‘more than’, ‘less than’ or ‘not enough’</p>			<ul style="list-style-type: none"> <li>•<sup>1</sup> used space</li> <li>•<sup>2</sup> add time for series</li> <li>•<sup>3</sup> convert to hours</li> <li>•<sup>4</sup> correct conclusion with reason within a valid strategy</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>0.87 \times 80 = 69.6</math> hours = 4176 (mins)</li> <li>•<sup>2</sup> <math>12 \times 55 + 4176 = 4836</math> (mins)</li> <li>•<sup>3</sup> <math>4836 \div 60 = 80.6</math> (hours)</li> <li>•<sup>4</sup> No, a further 0.6 hours is required</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> calculate time needed for series</li> <li>•<sup>2</sup> correctly convert to hours</li> <li>•<sup>3</sup> calculate storage space needed</li> <li>•<sup>4</sup> correct conclusion with reason within a valid strategy</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>12 \times 55 = 660</math> minutes</li> <li>•<sup>2</sup> 11 hours</li> <li>•<sup>3</sup> <math>11 \div 80 \times 100 = 13.75\%</math></li> <li>•<sup>4</sup> No, 13% storage space remains and she needs 13.75%</li> </ul>
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<p><b>8</b></p>	<p><b>Ans: see diagram</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> evidence of 180° rotation</li> <li>•<sup>2</sup> diagram completed</li> </ul>	<div style="text-align: center;">  </div> <p style="text-align: right;"><b>2R</b></p>																								
<p>NOTES:</p> <p>(i) Where candidates have a diagram with the correct and also extra rotations award 1/2</p> <p>(ii) Where candidates reflect or rotate through an angle other than 180° award 0/2</p>																										
<p><b>9</b></p>	<p><b>Ans: <math>x = 75.96\dots(^{\circ})</math></b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> valid trig ratio</li> <li>•<sup>2</sup> correct value for <math>\tan x^{\circ}</math> or equivalent</li> <li>•<sup>3</sup> correct angle</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>\tan x^{\circ} = 12/3</math></li> <li>•<sup>2</sup> <math>\tan^{-1}(12/3)</math> or <math>\tan x^{\circ} = 4</math></li> <li>•<sup>3</sup> <math>x = 75.96\dots(^{\circ})</math></li> </ul> <p style="text-align: right;"><b>3K</b></p>																								
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<b>10</b>	<p><b>Ans: 2 hours 25 minutes</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to use time/distance/speed formula</li> <li>•<sup>2</sup> finding travelling time</li> <li>•<sup>3</sup> knowing to find time difference</li> <li>•<sup>4</sup> finding time difference and correct communication of time</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>T = 162/36</math></li> <li>•<sup>2</sup> 4.5 hours</li> <li>•<sup>3</sup> 6h 55min – 4h 30min</li> <li>•<sup>4</sup> = 2h 25 min</li> </ul> <p style="text-align: right;"><b>4R</b></p>																								
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<b>11 (a)</b>	<p><b>Ans: points plotted</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> points P and Q plotted on grid</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> (-7, -3) and (5,6) plotted</li> </ul> <p style="text-align: right;"><b>1K</b></p>																								
<b>(b)</b>	<p><b>Ans: 9/12</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> correct value of <math>x</math> or <math>y</math></li> <li>•<sup>2</sup> valid gradient</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 9 or 12</li> <li>•<sup>2</sup> 9/12 or equivalent</li> </ul> <p style="text-align: right;"><b>2K</b></p>																								
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12	<b>Ans: 54·8(cm)</b> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to halve base</li> <li>•<sup>2</sup> correct Pythagoras statement</li> <li>•<sup>3</sup> knowing to find square root</li> <li>•<sup>4</sup> all calculations correct</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> 35</li> <li>•<sup>2</sup> <math>x^2 = 65^2 - 35^2</math></li> <li>•<sup>3</sup> <math>\sqrt{3000}</math></li> <li>•<sup>4</sup> 54·8(cm)</li> </ul> <p style="text-align: right;"><b>4R</b></p>

NOTES:

Final answers	with working	without working
54·8	4/4	3/4
55	4/4	3/4
73·8 ( $65^2 + 35^2$ )	3/4	0/4
26 ( $70^2 - 65^2$ )	2/4	0/4
95·5 ( $70^2 + 65^2$ )	2/4	0/4

Question No	Give 1 mark for each •	Illustrations of evidence for awarding each mark																		
13	<p><b>Ans: 71.6</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> completes Score × Freq column</li> <li>•<sup>2</sup> correct total of Score × Freq column</li> <li>•<sup>3</sup> correct division of above answer by 18</li> <li>•<sup>4</sup> correct rounding</li> </ul>	<table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="text-align: left;">Frequency</th> <th style="text-align: left;">Score x Frequency</th> </tr> </thead> <tbody> <tr><td>3</td><td>207</td></tr> <tr><td>2</td><td>140</td></tr> <tr><td>4</td><td>284</td></tr> <tr><td>4</td><td>288</td></tr> <tr><td>2</td><td>146</td></tr> <tr><td>1</td><td>74</td></tr> <tr><td>2</td><td>150</td></tr> <tr><td><b>Total</b></td><td><b>1289</b></td></tr> </tbody> </table> <ul style="list-style-type: none"> <li>•<sup>1</sup></li> <li>•<sup>2</sup></li> <li>•<sup>3</sup> Mean = <math>1289 \div 18 = 71.61</math></li> <li>•<sup>4</sup> 71.6</li> </ul> <p style="text-align: right;"><b>4K</b></p>	Frequency	Score x Frequency	3	207	2	140	4	284	4	288	2	146	1	74	2	150	<b>Total</b>	<b>1289</b>
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14	<p><b>Ans: 16 (complete metres)</b></p> <ul style="list-style-type: none"> <li>•<sup>1</sup> knowing to find circumference</li> <li>•<sup>2</sup> know how to find 15 rotations</li> <li>•<sup>3</sup> all calculations correct – must include the use of <math>\pi</math></li> <li>•<sup>4</sup> correct solution</li> </ul>	<ul style="list-style-type: none"> <li>•<sup>1</sup> <math>C = \pi \times 36 (= 113.04 \text{ cm})</math></li> <li>•<sup>2</sup> <math>15 \times 1.13</math> or <math>15 \times 113.04</math></li> <li>•<sup>3</sup> 16.9 or 1695.6</li> <li>•<sup>4</sup> 16 (complete metres)</li> </ul> <p style="text-align: right;"><b>4R</b></p>																												
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**KU 24 marks**  
**RE 24 marks**

[END OF PAPER 2 MARKING INSTRUCTIONS]

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