

## Paper 2

### Structure of the marking scheme

Candidate responses are marked according to different scales, depending on the types of response anticipated. Scales labelled A divide candidate responses into two categories (correct and incorrect), scales labelled B divide responses into three categories (correct, partially correct, and incorrect), and so on. The scales and the marks that they generate are summarised in this table:

Scale label	A	B	C	D
No of categories	2	3	4	5
5-mark scale	0, 5	0, 2, 5	0, 2, 3, 5	
10-mark scale		0, 5, 10	0, 4, 7, 10	0, 3, 5, 8, 10
15-mark scale				0, 4, 8, 12, 15
20-mark scale				0, 5, 10, 15, 20

A general descriptor of each point on each scale is given below. More specific directions in relation to interpreting the scales in the context of each question are given in the scheme, where necessary.

### Marking scales – level descriptors

#### A-scales (two categories)

- incorrect response (no credit)
- correct response (full credit)

#### B-scales (three categories)

- response of no substantial merit (no credit)
- partially correct response (partial credit)
- correct response (full credit)

#### C-scales (four categories)

- response of no substantial merit (no credit)
- response with some merit (low partial credit)
- almost correct response (high partial credit)
- correct response (full credit)

#### D-scales (five categories)

- response of no substantial merit (no credit)
- response with some merit (low partial credit)
- response about half-right (mid partial credit)
- almost correct response (high partial credit)
- correct response (full credit)

In certain cases, typically involving incorrect rounding, omission of units, a misreading that does not oversimplify the work, or an arithmetical error that does not oversimplify the work, a mark that is one mark below the full-credit mark may be awarded. This level of credit is referred to as *Full Credit –1*, and these types of errors are identified with an asterisk (\*). Thus, for example, in Scale 10C, *Full Credit –1* of 9 marks may be awarded.

No marks may be awarded other than those on the appropriate scale, and *Full Credit –1*.

In general, accept a candidate’s work in one part of a question for use in subsequent parts of the question, unless this oversimplifies the work involved.

### Summary of mark allocations and scales to be applied

<b>Question 1 (15)</b>		<b>Question 5 (35)</b>		<b>Question 9 (40)</b>
15D		(a)(i) 10D		(a)(i) 5C
		(a)(ii), (iii) 10C		(a)(ii), (iii) 15D
<b>Question 2 (45)</b>		(b)(i) 5B		(a)(iv), (b) 15D
(a), (b) 15D		(b)(ii), (iii) 10C		(c) 5B
(c) 15D				
(d) 15D		<b>Question 6 (20)</b>		<b>Question 10 (15)</b>
		(a) 5A		(a) 5C
<b>Question 3 (40)</b>		(b) 15D		(b) 10D
(a) 5C				
(b) 20D		<b>Question 7 (15)</b>		<b>Question 11 (15)</b>
(c) 15D		(a) 5B		(a), (b), (c) 15D
		(b) 10C		
<b>Question 4 (30)</b>				
(a)(i) 5C		<b>Question 8 (30)</b>		
(a)(ii) 5C		(a) 5B		
(b)(i) 10D		(b) 10C		
(b)(ii) 10D		(c) 5B		
		(d) 10C		

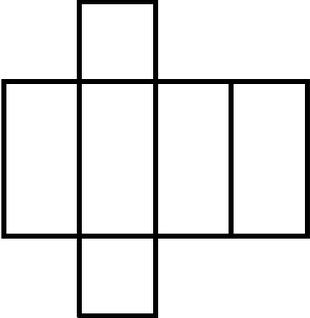
## Model Solutions & Marking Notes

Note: The model solutions for each question are not intended to be exhaustive – there may be other correct solutions. Any Examiner unsure of the validity of the approach adopted by a particular candidate to a particular question should contact his / her Advising Examiner.

Q1	Model Solution – 15 Marks	Marking Notes
	4 1 2 0	<b>Scale 15D (0, 4, 8, 12, 15)</b> Accept correct answer without work <i>Low Partial Credit</i> <ul style="list-style-type: none"><li>• 1 part correct</li><li>• Draws an axis of symmetry</li><li>• Some relevant statement about axial symmetry</li></ul> <i>Mid Partial Credit</i> <ul style="list-style-type: none"><li>• 2 parts correct</li></ul> <i>High Partial Credit</i> <ul style="list-style-type: none"><li>• 3 parts correct</li><li>• Draws correct axes of symmetry for first three parts</li></ul>

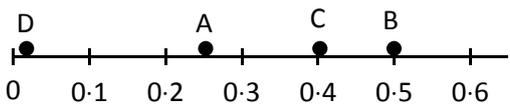
Q2	Model Solution – 45 Marks	Marking Notes
(a), (b)	<p>(a)  Length × Breadth  = 50 × 25  = 1250 m<sup>2</sup></p> <p>(b)  2×(Length + Breadth)  = 2 × (50 + 25)  = 2 × 75 = 150 m</p>	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Formula for area or perimeter</li> <li>• One calculation relevant to either part</li> <li>• Finds perimeter in (a)</li> <li>• Finds area in (b)</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (a) correct</li> <li>• Finds perimeter in (a) <b>and</b> area in (b)</li> <li>• Work of merit in (a) and (b)</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (a) correct, <b>and</b> work of merit in (b)</li> <li>• (b) correct</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * for no or incorrect units, the first time it occurs</li> </ul>
(c)	<p><i>Method 1:</i>  <math>(20 \times 25) + \left(\frac{1}{2} \times 20 \times 25\right)</math>  = 500 + 250  = 750 m<sup>2</sup></p> <p style="text-align: center;"><b>OR</b></p> <p><i>Method 2:</i>  Total rectangle: 25 × 50 = 1250  Unshaded: <math>(10 \times 25) + \left(\frac{1}{2} \times 20 \times 25\right)</math>  = 250 + 250 = 500  Answer: 1250 – 500 = 750 m<sup>2</sup></p> <p style="text-align: center;"><b>OR</b></p> <p><i>Method 3:</i>  Extend rectangle by 10 m at the RHS.  Then answer = <math>\frac{1}{2} \times 60 \times 25 = 750 \text{ m}^2</math></p>	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p>Accept correct answer with no units</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Some work of merit, for example: Splits into rectangle(s) and triangle, or correct relevant formula</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Finds one relevant area</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Finds two relevant areas</li> <li>• 60 × 25 = 1500</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * if the area of the unshaded region <i>EBCF</i> is found, with supporting work.</li> </ul>

Q2	Model Solution – 45 Marks	Marking Notes
(d)	<p>(i) <math>c^2 = a^2 + b^2</math>  <math>\Rightarrow c^2 = 20^2 + 25^2</math>  (ii) <math>\Rightarrow c^2 = 400 + 625</math>  <math>\Rightarrow c^2 = 1025</math>  <math>\Rightarrow c = \sqrt{1025} = 32 \text{ m}</math> [nearest m]</p> <p>(ii) <math>40 + 25 + 20 + 32</math>  <math>= 117 \text{ m}</math></p>	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Work of merit in (i), for example: Theorem of Pythagoras stated correctly, or indicates <math>20^2</math> or <math>25^2</math></li> <li>• Work of merit in (ii), for example: Adds two relevant numbers</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• <math>c^2 = 20^2 + 25^2</math></li> <li>• (ii) correct</li> <li>• Work of merit in both (i) <b>and</b> (ii)</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (i) correct</li> <li>• (ii) correct <b>and</b> work of merit in (i)</li> </ul> <p><i>Full Credit -1</i></p> <ul style="list-style-type: none"> <li>• Apply a * for incorrect or no rounding.</li> <li>• Apply a * for no or incorrect units, if a * was not applied for these in (a) or (b).</li> </ul>

Q3	Model Solution – 40 Marks	Marking Notes
(a)	$l \times b \times h$ $= 3 \times 3 \times 5$ $= 45 \text{ cm}^3$	<p><b>Scale 5C (0, 2, 3, 5)</b> Accept correct answer without work.</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Correct formula</li> <li>• Finds area of one or more surfaces</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• <math>3 \times 3 \times 5</math></li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * for no or incorrect units</li> </ul>
(b)	 <p style="text-align: center;"><i>or any other valid net.</i></p>	<p><b>Scale 20D (0, 5, 10, 15, 20)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 correct face, anywhere on grid</li> <li>• Sketch of net of any cuboid with at least 5 correct faces</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Correct net of cube with sides of 3 cm</li> <li>• 4 correct faces anywhere on grid</li> <li>• 2 or 3 correct faces in correct positions relative to the given face</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 4 correct faces in correct positions</li> <li>• Correct net with excess faces</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * to a correct net without using the given face.</li> </ul>

Q3	Model Solution – 40 Marks	Marking Notes
(c)	$\pi r^2 h$ $= (\pi)(1.2)^2(4)$ $= 18 \text{ cm}^3 \text{ [nearest cm}^3\text{]}$	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p>Accept correct answer with no units</p> <p>Consider solution as requiring 4 steps:</p> <p>Step 1: Correct formula</p> <p>Step 2: Substitution of <math>r</math> and <math>h</math> into formula</p> <p>Step 3: Calculates <math>r^2</math></p> <p>Step 4: Evaluates answer</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 step correct</li> <li>• Product of 2 relevant numbers</li> <li>• Uses <math>2\pi rh</math> formula and substitutes for <math>r</math> and <math>h</math></li> <li>• Uses <math>A = \pi r^2</math> and substitutes correctly for <math>r</math></li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 2 steps correct</li> <li>• Uses <math>2\pi rh</math> formula and finishes correctly</li> <li>• <math>A = 1.44\pi</math></li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 3 steps correct</li> <li>• Uses <math>A = \pi r^2</math> and finishes correctly.</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * for incorrect rounding</li> </ul>

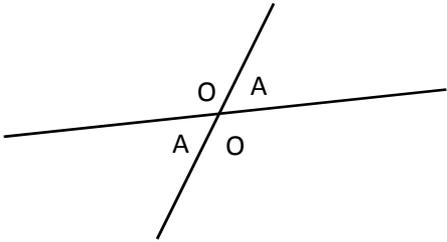
Q4	Model Solution – 30 Marks			Marking Notes	
(a)(i)	Grey 90°	Black 120°	White 150°	<p><b>Scale 5C (0, 2, 3, 5)</b></p> <p>Accept correct answer without unit (degrees)</p> <p>A tolerance of 3° applies</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 angle correct</li> <li>• 3 angles sum to 360°</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 2 angles correct</li> <li>• 1 angle measured correctly and all 3 angles summing to 360°</li> </ul>	
(a)(ii)	$\frac{90}{360} \times 60 = \frac{1}{4} \times 60 = 15 \text{ times}$			<p><b>Scale 5C (0, 2, 3, 5)</b></p> <p>Accept correct answer without work.</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Some work of merit, e.g. indicates 360°</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• One correct relevant calculation, for example <math>\frac{360}{90} = 4</math></li> </ul> <p><i>Full credit -1</i></p> <ul style="list-style-type: none"> <li>• Estimates for either White or Black</li> </ul>	
(b)(i)	B C D	$\frac{1}{2}$ $\frac{2}{5}$ $\frac{1}{50}$	50% 40% 2%	0.5 0.4 0.02	<p><b>Scale 10D (0, 3, 5, 8, 10)</b></p> <p>Accept percentage without % sign (i.e. 50)</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Work of merit in 1 part</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 2 parts correct</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 3 parts correct</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * if the fraction is not given in its simplest form</li> </ul>

Q4	Model Solution – 30 Marks	Marking Notes
(b)(ii)		<p><b>Scale 10D (0, 3, 5, 8, 10)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 correct</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 2 correct</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 3 correct</li> <li>• Points marked correctly but not labelled .</li> </ul>

Q5	Model Solution – 35 Marks	Marking Notes																														
(a)(i)	<table border="1" data-bbox="327 806 821 1164"> <tr> <td>4</td> <td>7</td> <td>9</td> <td>9</td> <td></td> <td></td> <td></td> </tr> <tr> <td>5</td> <td>0</td> <td>6</td> <td>7</td> <td>8</td> <td></td> <td></td> </tr> <tr> <td>6</td> <td>5</td> <td>7</td> <td>8</td> <td>9</td> <td>9</td> <td>9</td> </tr> <tr> <td>7</td> <td>5</td> <td>9</td> <td></td> <td></td> <td></td> <td></td> </tr> </table> <p>Key: <table border="1" data-bbox="534 1198 646 1288"> <tr> <td>5</td> <td>6</td> </tr> </table> = 56 [kg]</p>	4	7	9	9				5	0	6	7	8			6	5	7	8	9	9	9	7	5	9					5	6	<p><b>Scale 10D (0, 3, 5, 8, 10)</b></p> <p>Accept diagram with unordered entries.</p> <p>Accept the key without units.</p> <p>Consider solution as comprising 16 entries: 15 entries on the diagram, plus the key.</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 correct entry</li> </ul> <p><i>Mid partial Credit</i></p> <ul style="list-style-type: none"> <li>• 6 correct entries</li> <li>• All entries correct but rewrites the stem for each number</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 11 correct entries</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * if just 1 entry in the diagram is omitted or incorrect. (If the key is missing, award at most <i>High Partial Credit</i>.)</li> </ul>
4	7	9	9																													
5	0	6	7	8																												
6	5	7	8	9	9	9																										
7	5	9																														
5	6																															

Q5	Model Solution – 35 Marks	Marking Notes
(a)(ii), (iii)	(ii) Median = $\frac{15+1}{2} = 8$ th entry $\Rightarrow$ Median = 65 kg  (iii) $79 - 47 = 32$ kg	<b>Scale 10C (0, 4, 7, 10)</b> Accept correct answer without work <i>Low Partial Credit</i> <ul style="list-style-type: none"> <li>Shows understanding of median, for example: mentions “8<sup>th</sup>” or “middle”</li> <li>Shows understanding of range, for example: highlights max or min values</li> <li>Finds mean or mode correctly</li> </ul> <i>High Partial Credit</i> <ul style="list-style-type: none"> <li>(ii) <b>or</b> (iii) correct</li> <li>Work of merit in both (ii) and (iii) (as covered under <i>LPC</i> above)</li> </ul> <i>Full Credit –1</i> <ul style="list-style-type: none"> <li>Apply a * if range given from “47 to 79 “</li> </ul>
(b)(i)	$\frac{927}{15} = \frac{309}{5}$ kg or 61.8 kg	<b>Scale 5B (0, 2, 5)</b> Accept correct answer without work <i>Partial Credit</i> <ul style="list-style-type: none"> <li>Divides 927 by incorrect value</li> <li>Attempts to add original values</li> </ul>
(b)(ii), (iii)	(ii) $\frac{309}{5} - 1 = \frac{304}{5}$ kg or $61.8 - 1 = 60.8$ kg  <p style="text-align: center;"><b>OR</b></p> $\frac{46+48+48+49+\dots+74+78}{15}$ $= \frac{912}{15}$ $= \frac{304}{5} \text{ kg or } 60.8\text{kg}$  (iii) $927 - 15 = 912$ kg  <p style="text-align: center;"><b>OR</b></p> $60.8 \times 15 = 912 \text{ kg}$  <p style="text-align: center;"><b>OR</b></p> $46 + 48 + 48 + 49 + \dots + 74 + 78$ $= 912 \text{ kg}$	<b>Scale 10C (0, 4, 7, 10)</b> Accept correct answers without work <i>Low Partial Credit</i> <ul style="list-style-type: none"> <li>Work of merit, for example: Subtracts 1 from any of the original weights, or shows understanding of mean</li> </ul> <i>High Partial Credit</i> <ul style="list-style-type: none"> <li>(ii) <b>or</b> (iii) correct</li> </ul>

Q6	Model Solution – 20 Marks	Marking Notes
(a)	<i>Any relevant question giving numerical data</i>	<p><b>Scale 5A (0, 5)</b></p> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * if the question is not about apps or social media</li> </ul>
(b)(i), (ii)	<p>(i)    8, <b>B</b>            16, <b>B</b>            32, <b>B</b>                  8, <b>W</b>            16, <b>W</b>            32, <b>W</b>                  8, <b>S</b>            16, <b>S</b>            32, <b>S</b></p> <p>(ii)    <b>3 × 3 × 2 = 18</b> options</p> <p style="text-align: center;"><b>OR</b></p> <p><i>Lists all of the possibilities and counts them to get 18</i></p>	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p>Accept correct answer without work</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 correct entry in (i)</li> <li>• 3 entries in (i) with one aspect correct (memory size or colour)</li> <li>• Work of merit in (ii)</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 3 correct entries in (i)</li> <li>• All 7 entries in (i) with one aspect correct</li> <li>• 3 correct possibilities listed in (ii)</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (i) <b>or</b> (ii) correct</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * if just 1 entry in (i) is omitted or incorrect.</li> <li>• Apply a * if all possibilities are listed but not counted or counted incorrectly.</li> </ul>

Q7	Model Solution – 15 Marks	Marking Notes
(a)(i), (ii)	<p data-bbox="264 219 676 250"><i>Either A and either O, as below.</i></p> 	<p data-bbox="794 228 1011 259"><b>Scale 5B (0, 2, 5)</b></p> <p data-bbox="794 273 967 304"><i>Partial Credit</i></p> <ul data-bbox="842 318 1359 425" style="list-style-type: none"> <li>• 1 letter correct</li> <li>• 1 or 2 letters correct but with 1 or 2 incorrect</li> </ul>
(b)	$ \angle f  = 45^\circ$ $ \angle g  = 25^\circ$ $ \angle h  = 45 + 25 = 70^\circ$ <p data-bbox="491 721 539 752" style="text-align: center;"><b>OR</b></p> $ \angle h  = 180 - (180 - (45 + 25))$ $= 180 - (110)$ $= 70^\circ$	<p data-bbox="794 595 1075 627"><b>Scale 10C (0, 4, 7, 10)</b></p> <p data-bbox="794 640 1027 672"><i>Low Partial Credit</i></p> <ul data-bbox="842 685 1394 828" style="list-style-type: none"> <li>• <i>f</i> or <i>g</i> correct</li> <li>• Work of merit towards <i>h</i>, for example: some relevant calculation, or indicates <math>180^\circ</math></li> </ul> <p data-bbox="794 855 1034 887"><i>High Partial Credit</i></p> <ul data-bbox="842 900 1327 1043" style="list-style-type: none"> <li>• <i>h</i> correct</li> <li>• <i>f</i> and <i>g</i> correct</li> <li>• <i>f</i> or <i>g</i> correct, and work of merit towards <i>h</i></li> </ul>

Q8	Model Solution – 30 Marks	Marking Notes
(a)	<p><i>Answer:</i> Isosceles</p> <p><i>Reason:</i> 2 of the angles are the same</p> <p style="text-align: center;"><b>OR</b></p> <p>The 3 angles aren't equal, but the 3 angles aren't all different</p> <p style="text-align: center;"><i>or any other valid reason</i></p>	<p><b>Scale 5B (0, 2, 5)</b></p> <p><i>Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Answer correct</li> <li>• Shows understanding of one given type of triangle.</li> <li>• Incorrect answer but correct reason.</li> </ul>
(b)	$\begin{aligned}  \angle O  &= 180 - (2 \times 55) \\ &= 180 - 110 \\ &= 70^\circ \end{aligned}$	<p><b>Scale 10C (0, 4, 7, 10)</b></p> <p>Accept correct answer without work</p> <p>Accept correct answer without units (degrees)</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Work of merit, for example: Some relevant calculation, or indicates <math>180^\circ</math></li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Some relevant calculation involving <math>180^\circ</math></li> </ul>
(c)	<p>"Triangles that have the same size angles"</p> <p style="text-align: center;"><b>OR</b></p> <p>"Triangles whose sides are in proportion"</p> <p style="text-align: center;"><i>or any other valid explanation</i></p>	<p><b>Scale 5B (0, 2, 5)</b></p> <p><i>Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Work of merit e.g. the two triangles are isosceles.</li> </ul>
(d)	$ BC  = 2 \times 1.3 = 2.6 \text{ m}$ <p style="text-align: center;"><b>OR</b></p> $\frac{ BC }{1.3} = \frac{2}{1}$ $\therefore  BC  = 2 \times 1.3 = 2.6 \text{ m}$	<p><b>Scale 10C (0, 4, 7, 10)</b></p> <p>Accept correct answer without work</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Some work of merit, for example: indicates 2 or <math>\frac{1}{2}</math></li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Equates relevant ratios</li> </ul>

Q9	Model Solution – 40 Marks	Marking Notes
(a)(i)	$B = (3, 1)$ $H = (8, 5)$	<p><b>Scale 5C (0, 2, 3, 5)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 ordinate correct</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• B or H correct</li> <li>• Correct co-ordinates but reversed</li> </ul> <p><i>Full Credit –1</i></p> <ul style="list-style-type: none"> <li>• Apply a * if <math>B</math> and <math>H</math> are swapped, but otherwise correct</li> </ul>
(a) (ii), (iii)	(ii) $B$ joined to $H$ with a line segment  (iii) Perpendicular bisector of $[BH]$ constructed on diagram, with construction lines shown	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (ii) correct</li> <li>• Work of merit in (iii), for example: arc drawn with centre at <math>B</math> or <math>H</math></li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (ii) correct <b>and</b> work of merit in (iii)</li> <li>• Significant work of merit in (iii), for example: Arcs drawn with centres at both <math>B</math> <b>and</b> <math>H</math>, or perpendicular bisector drawn, with no construction lines</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• (ii) correct <b>and</b> significant work of merit in (iii)</li> <li>• (iii) correct</li> </ul>

Q9	Model Solution – 40 Marks	Marking Notes
(a) (iv), (b)	(a)(iv) $\left(\frac{3+8}{2}, \frac{1+5}{2}\right)$ $= \left(\frac{11}{2}, \frac{6}{2}\right)$ $= \left(5\frac{1}{2}, 3\right)$  (b) $\sqrt{(3-8)^2 + (6-4)^2}$ $= \sqrt{(-5)^2 + (2)^2}$ $= \sqrt{25 + 4}$ $= \sqrt{29} \text{ cm}$	<p><b>Scale 15D (0, 4, 8, 12, 15)</b></p> <p>Accept correct answer without units in (b).            In (a)(iv), accept correct answer without work.            In (a)(iv) accept a tolerance of <math>\pm 0.2</math>            In (b), correct answer without work is considered substantial work (<b>not</b> correct).</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Work of merit in one part, for example:              Correct formula; or rise or run identified; or distance measured from diagram (allow a tolerance of <math>\pm 0.2</math>)</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Work of merit relevant to <b>both</b> parts</li> <li>• Substantial work in 1 part, for example:              In (a)(iv): correctly fills in formula, or one co-ordinate correct, or co-ordinates reversed but otherwise correct;              In (b): correctly fills in formula, or fills formula incorrectly but finishes correctly, or correct answer without work.</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• 1 part correct</li> <li>• Substantial work in 1 part <b>and</b> work of merit in the other part.</li> </ul>
(c)	$180 \div 4 = 45 \text{ km}$	<p><b>Scale 5B (0, 2, 5)</b></p> <p>Accept correct answer without work.            Accept correct answer without units.</p> <p><i>Partial Credit</i></p> <ul style="list-style-type: none"> <li>• <math>\frac{180}{4}</math> or <math>180 \div 4</math> or <math>\frac{4}{180}</math></li> </ul>

Q10	Model Solution – 15 Marks	Marking Notes
(a)	<p>Answer: (0, 8)</p> <p>Justification:</p> $(0,8): y = 3x + 8$ $8 = 3(0) + 8$ $8 = 8 \text{ True}$ <p style="text-align: center;"><b>OR</b></p> <p>States <i>Line cuts y-axis at (0,8)</i></p> <p style="text-align: center;"><i>or any other valid justification, for example: diagram, or shows that the other 2 points are not on the line</i></p>	<p><b>Scale 5C (0, 2, 3, 5)</b></p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Answer correct</li> <li>• Substitution of any given values into equation</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Correct answer and some correct substitution into equation</li> <li>• Coordinates reversed with justification</li> <li>• Correct justification with incorrect box ticked</li> </ul>
(b)	<p><i>Method 1:</i></p> $2x + 7 = 5x - 11$ $2x - 5x = -11 - 7$ $-3x = -18$ $x = 6$ $y = 2(6) + 7$ $y = 12 + 7$ $y = 19$ <p>Point = (6, 19)</p> <p style="text-align: center;"><b>OR</b></p> <p><i>Method 2:</i></p> $-y = -2x - 7$ $\underline{y = 5x - 11}$ $0 = 3x - 18$ $18 = 3x$ $6 = x$ $y = 2(6) + 7$ $y = 12 + 7$ $y = 19$ <p>Point = (6, 19)</p>	<p><b>Scale 10D (0, 3, 5, 8, 10)</b></p> <p>Accept correct answer without work.</p> <p><i>Low Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Sets up equation in Method 1</li> <li>• Matches co-efficient of <math>x</math> or multiplies one of the given equations by -1 in Method 2.</li> <li>• Any correct transposition</li> </ul> <p><i>Mid Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Correct transpositions in Method 1</li> <li>• Eliminates one variable in Method 2</li> </ul> <p><i>High Partial Credit</i></p> <ul style="list-style-type: none"> <li>• Solves for one variable</li> </ul>

Q11	Model Solution – 15 Marks	Marking Notes
(a), (b), (c)	(a) $\frac{x}{3}$ (b) $\sin 65^\circ = 0.906 \dots$ $= 0.9$ [1 D.P] (c) $\frac{x}{3} = 0.9$ $\Rightarrow x = 3 \times 0.9 = 2.7$ units	<b>Scale 15D (0, 4, 8, 12, 15)</b> Accept correct answer without units in (c) <i>Low Partial Credit</i> <ul style="list-style-type: none"> <li>• Work of merit in any part , for example: uses <math>x</math> or 3 in making fraction</li> <li>• Labels 1 side of triangle correctly</li> <li>• States correct relevant trigonometric ratio</li> </ul> <i>Mid Partial Credit</i> <ul style="list-style-type: none"> <li>• 1 part correct</li> <li>• Work of merit in 2 parts</li> </ul> <i>High Partial Credit</i> <ul style="list-style-type: none"> <li>• 2 parts correct</li> </ul> <i>Full Credit 1</i> <ul style="list-style-type: none"> <li>• Apply a * for calculator in the incorrect mode</li> <li>• Apply a * in (b) for incorrect or no rounding.</li> </ul>

## Marcanna Breise as ucht freagairt trí Ghaeilge

Léiríonn an tábla thíos an méid marcanna breise ba chóir a bhronnadh ar iarrthóirí a ghnóthaíonn níos mó ná 75% d'iomlán na marcanna.

N.B. Ba chóir marcanna de réir an ghnáthráta a bhronnadh ar iarrthóirí nach ghnóthaíonn níos mó ná 75% d'iomlán na marcanna don scrúdú. Ba chóir freisin an marc bóonais sin **a shlánú síos**.

### Tábla 300 @ 5%

Bain úsáid as an tábla seo i gcás na n-ábhar a bhfuil 300 marc san iomlán ag gabháil leo agus inarb é 5% gnáthráta an bhónais.

Bain úsáid as an ngnáthráta i gcás 225 marc agus faoina bhun sin. Os cionn an mharc sin, féach an tábla thíos.

Bunmharc	Marc Bónais
226	11
227 - 233	10
234 - 240	9
241 - 246	8
247 - 253	7
254 - 260	6

Bunmharc	Marc Bónais
261 - 266	5
267 - 273	4
274 - 280	3
281 - 286	2
287 - 293	1
294 - 300	0