UNIT 2: CALCULATOR-ALLOWED, HIGHER TIER GENERAL INSTRUCTIONS for MARKING GCSE Mathematics

1. The mark scheme should be applied precisely and no departure made from it. Marks should be awarded directly as indicated and no further subdivision made.

2. <u>Marking Abbreviations</u>

The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.

- cao = correct answer only
- MR = misread
- PA = premature approximation
- bod = benefit of doubt
- oe = or equivalent

si = seen or implied

ISW = ignore subsequent working

F.T. = follow through (\checkmark indicates correct working following an error and \checkmark indicates a further error has been made)

Anything given in brackets in the marking scheme is expected but, not required, to gain credit.

3. <u>Premature Approximation</u>

A candidate who approximates prematurely and then proceeds correctly to a final answer loses 1 mark as directed by the Principal Examiner.

4. <u>Misreads</u>

When the <u>data</u> of a question is misread in such a way as not to alter the aim or difficulty of a question, follow through the working and allot marks for the candidates' answers as on the scheme using the new data.

This is only applicable if a wrong value, is used consistently throughout a solution; if the correct value appears anywhere, the solution is not classed as MR (but may, of course, still earn other marks).

5. <u>Marking codes</u>

- 'M' marks are awarded for any correct method applied to appropriate working, even though a numerical error may be involved. Once earned they cannot be lost.
- 'm' marks are dependent method marks. They are only given if the relevant previous 'M' mark has been earned.
- 'A' marks are given for a numerically correct stage, for a correct result or for an answer lying within a specified range. They are only given if the relevant M/m mark has been earned either explicitly or by inference from the correct answer.
- 'B' marks are independent of method and are usually awarded for an accurate result or statement.
- 'S' marks are awarded for strategy
- 'E' marks are awarded for explanation
- 'U' marks are awarded for units
- 'P' marks are awarded for plotting points
- 'C' marks are awarded for drawing curves

UNIT 2: CALCULATOR-ALLOWED, HIGHER TIER

MarksComments1. Total of Interior angles5 × 180(*)900 - sum of 4 angles given (594*) (=306) x_3^3 (Each of the 3 angles is)102(*)4.T. Their 900' provide >594(Each of the 3 angles is)102(*)4.Attensitive: Corresponding exterior angles = a80 - sum of exterior angles found (726*) (=234*)5.5.2. (a)5.2. (a)5.2. (a)7.2. (a)7.3.7.4.7.5.7.6.7.7.8.7.7.7.8.8.8.17.7.7.8.17.7.7.8.17.7.8.17.8.17.9.107.9.107.9.117.10.117.11.127.12.127.13.127.14.127.15.138.116.107.17.118.118.119.19.1010.19.1010.10.11	GCSE Mathematics	T	
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$ \begin{array}{ c c c c c c c c } & 4.6 & -9.864 & 4.65 & -7.005 \\ & 4.7 & -4.077 & 4.75 & -1.078 \\ & 4.8 & 1.992 & 4.85 & 5.134 \\ & 4.9 & 8.349 \\ & 5 & 15 \\ \hline & 4 \\ \hline & \\ & 5.(a) \ 0.35 & 0.8 & 0.2 & 0.8 \ \text{on the correct branches} \\ & & B2 \\ & & B1 \ \text{for any two correct entries. Accept fractions} \\ \hline & & \\ $			
$\begin{bmatrix} 4.8 & 1.992 & 4.85 & 5.134 \\ 4.9 & 8.349 \\ 5 & 15 \\ 4 \\ \end{bmatrix}$ 5.(a) 0.35 0.8 0.2 0.8 on the correct branches (b) 0.65 × 0.2 \\ \end{bmatrix} B1 for any two correct entries. Accept fractions M1			4.6 -9.864 4.65 -7.005
$ \begin{array}{ c c c c c c } & & & & & & & & & & & & & & & & & & &$			
5 15 4 4 5.(a) 0.35 0.8 0.2 0.8 on the correct branches B2 B1 for any two correct entries. Accept fractions (b) 0.65 × 0.2 M1 M1 M1 M1			
4 5.(a) 0.35 0.8 0.2 0.8 on the correct branches B2 B1 for any two correct entries. Accept fractions (b) 0.65 × 0.2 M1			
5.(a) 0.35 0.80.20.8on the correct branchesB2B1 for any two correct entries. Accept fractions(b) 0.65×0.2 M1		1	
	5.(a) 0.35 0.8 0.2 0.8 on the correct branches		B1 for any two correct entries. Accept fractions
		N 4 4	
	- 0.15		

GCSE Mathematics		
Unit 2: Higher Tier	Marks	Comments
6. Sight of (Perimeter of bed A=) $2x + 2y = 18$ AND (Perimeter of bed B=) $4x + 2y + 6 = 34$	B1	
or equivalent Correct method to solve equations simultaneously.	M1 A1	F.T. 'their equations' if of equivalent difficulty.
$ \begin{array}{l} x = 5 \\ y = 4 \end{array} $	A1	Both values consistent with 'their equations'.
(Area of B =) 10×7 = 70(m ²)	M1 A1	F.T. 'their derived values for <i>x</i> and <i>y</i> '. $2x \times (y+3)$
	6	
7. $(x-5)(x+4)$ x=5 AND $x=-4$	B2 B1 3	B1 for $(x \dots 5)(x \dots 4)$. Strict F.T. from their brackets
8 (a) (0,2)	B1	
(b) 7 units	B1	
(c) $y = \frac{-x}{7} + 3$	B1	
9(a) AD = 16 × sin56°	3 M2	M1 for sin56° = <i>AD</i> /16
9(a) AD = 16 × sin56° = 13·2(64)(cm) OR 13·3(cm)	A1	C.A.O. Allow 13 from correct work but penalise final answer –1 for premature approximation.
(b) (<i>EC</i> =) 9·7()	B1	F.T. 23 – 'their <i>AD</i> '.
tan <i>x</i> = <u>9·7()</u> 15	M1	F.T. 'their <i>EC</i> '
$x = 32.9(^{\circ})$ or $33(^{\circ})$	A1	
Organisation and communication Accuracy of writing	OC1 W1	
	8	
10.(a) $\frac{b-a}{ab} = \frac{1}{c}$	B1	
ab $cc = \underline{ab}b - a$	B1	
(b) $x = \{ -4 \pm \sqrt{(4^2 - 4 \times 3 \times -18)} \} / 2 \times 3$ = $[-4 \pm \sqrt{232}] / 6$	M1 A1	Allow one slip in substitution in correct formula.
x = 1.87 and $x = -3.21$	A1 5	C.A.O.
11(a) $AP = CR$ AND $AS = CQ$	B1	With reference to mid-points.
SÂP = QĈA (So triangles are congruent because of)SAS	B1 B1	With reference to 90°.
(b) Rhombus because of equal sides.	B1 4	Must refer to equal sides.
12. $\underline{x} \times \pi \times r^2 = r^2$ 360	M1	Accept their symbol or word for 'r'.
$x = \frac{360}{\pi}$	A1	
π = 114(·5°) or 115 ^(°)	A1 3	

GCSE Mathematics Unit 2: Higher Tier	Marks	Comments
13 (a) $x(x+6) - x(x-3)$ as a <u>numerator</u> .	M1	Accept intention of brackets when working not shown, e.g. $x^2 + 6x - x^2 - 3x$.
(x-3)(x+6) as a <u>denominator</u> .	M1	
9x/(x-3)(x+6)	A1	C.A.O. If $(x - 3) (x + 6)$ expanded, must be correct. If M1, M1, A1 awarded penalise further incorrect work -1. If no marks then SC1 for $9x$.
(b) $(7x+10)(7x-10)$	B2	B1 for $(7x \dots 10) (7x \dots 10)$
2(7x + 10)	B1	
$\frac{(7x-10)}{2}$	B1	F.T. provided no more than 1 previous error and provided simplification required. Mark final answer. Accept $3 \cdot 5x - 5$
	7	
14(a)	B2	For all correct. B1 for two or three correct.
(b) 8/21	B2 4	F.T. their complete Venn diagram. B1 for a numerator of 8 in a fraction < 1. B1 for a denominator of 21 in a fraction < 1.
15 (a) <u>1</u> √3	B1	
(b) $\frac{-\sqrt{3}}{2}$	B1	
(c) $y = ax^3 + b$	B1 3	
16. Sine curve	M1	Intention to sketch a portion of a sine curve with minimum
Correct sine curve with 2, 3 and 4 shown on the y-axis and 0°, 180° and 360° shown or implied.	A1	period of 360°.
47 Has of accine with the week ADO AND	2	
17. Use of cosine rule with triangle ABC AND ½ab sinC with triangle ACD.	S1	Or alternative full strategy.
$AC^{2} = 8 \cdot 8^{2} + 7 \cdot 2^{2} - 2 \times 8 \cdot 8 \times 7 \cdot 2 \times \cos 84$ AC = 10.77()(cm)	M1 A2	A1 for $AC^2 = 116(.03)$
(Area <i>ACD</i> =) ½ × 18·6 × <i>AC</i> × sin47 = 73·2(6)(cm ²)	M1 A1	F.T. their derived AC
18.(a) 14	6 B1	
(b) 6/20 × 5/19	M1	
0·078 Statement that this is less than 8%	A1 A1	
(c) NO and use of 0.3×0.3 or equivalent.	E1 5	Accept explanation based on large sample size.

UNIT 2: CALCULATOR-ALLOWED, INTERMEDIATE TIER GENERAL INSTRUCTIONS for MARKING GCSE Mathematics

- **1.** The mark scheme should be applied precisely and no departure made from it. Marks should be awarded directly as indicated and no further subdivision made.
- 2. <u>Marking Abbreviations</u>

The following may be used in marking schemes or in the marking of scripts to indicate reasons for the marks awarded.

- cao = correct answer only
- MR = misread
- PA = premature approximation
- bod = benefit of doubt
- oe = or equivalent

si = seen or implied

ISW = ignore subsequent working

F.T. = follow through (\checkmark indicates correct working following an error and \checkmark indicates a further error has been made)

Anything given in brackets in the marking scheme is expected but, not required, to gain credit.

3. <u>Premature Approximation</u>

A candidate who approximates prematurely and then proceeds correctly to a final answer loses 1 mark as directed by the Principal Examiner.

4. <u>Misreads</u>

When the <u>data</u> of a question is misread in such a way as not to alter the aim or difficulty of a question, follow through the working and allot marks for the candidates' answers as on the scheme using the new data.

This is only applicable if a wrong value, is used consistently throughout a solution; if the correct value appears anywhere, the solution is not classed as MR (but may, of course, still earn other marks).

- 5. <u>Marking codes</u>
 - 'M' marks are awarded for any correct method applied to appropriate working, even though a numerical error may be involved. Once earned they cannot be lost.
 - 'm' marks are dependent method marks. They are only given if the relevant previous 'M' mark has been earned.
 - 'A' marks are given for a numerically correct stage, for a correct result or for an answer lying within a specified range. They are only given if the relevant M/m mark has been earned either explicitly or by inference from the correct answer.
 - 'B' marks are independent of method and are usually awarded for an accurate result or statement.
 - 'S' marks are awarded for strategy
 - 'E' marks are awarded for explanation
 - 'U' marks are awarded for units
 - 'P' marks are awarded for plotting points
 - 'C' marks are awarded for drawing curves