Cambridge Assessment International Education

Cambridge IGCSE™

MATHEMATICS **0580/42**

Paper 42 **February/March 2025**

MARK SCHEME

Maximum Mark: 100

Pre-standardisation

This document consists of **19** printed pages.

Cambridge Assessment International Education – Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptions for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptions for the question
- the specific skills defined in the mark scheme or in the generic level descriptions for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently, e.g. in situations where candidates have not followed instructions or in the application of generic level descriptions.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptions in mind.

Mathematics-Specific Marking Principles

1 Unless a particular method has been specified in the question, full marks may be awarded for any correct method. However, if a calculation is required then no marks will be awarded for a scale drawing.

2 Unless specified in the question, non-integer answers may be given as fractions, decimals or in standard form. Ignore superfluous zeros, provided that the degree of accuracy is not affected.

3 Allow alternative conventions for notation if used consistently throughout the paper, e.g. commas being used as decimal points.

4 Unless otherwise indicated, marks once gained cannot subsequently be lost, e.g. wrong working following a correct form of answer is ignored (isw).

5 Where a candidate has misread a number or sign in the question and used that value consistently throughout, provided that number does not alter the difficulty or the method required, award all marks earned and deduct just 1 A or B mark for the misread.

6 Recovery within working is allowed, e.g. a notation error in the working where the following line of working makes the candidate's intent clear.

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RMA^3	Marking instructions	Syllabus	Paper
March 2025	IGCSE Examinations	0580	42

PREPARATION FOR MARKING

1. Please familiarise yourself with the *Examiners' Instructions (on-screen)*.

2. If this is the first time you have marked using RMA^3 you should access the training videos from the Assessment Specialist website. If you have marked using RMA^3 before you may wish to re-visit this training.

3. Read through the question paper and provisional mark scheme. There WILL be further amendments to this mark scheme and you will be emailed a final version of the mark scheme following the STM meeting to use for live marking.

4. Browse scripts in RMA^3. Please look at as many as you can and refer any queries/issues to your Team Leader for consideration at their STM meeting.

STANDARDISATION

1. A **FINAL** mark scheme will be issued after the STM meeting. You **must** use this version of the mark scheme for your marking.

2. Download and mark 10 practice scripts and check them, ensuring the Comments Box is open (the Principal Examiner will add comments justifying the marking of questions when it is not obvious). When you have checked your practice scripts, submit them.

3. Download and mark 10 standardisation scripts and submit them to your Team Leader.

4. Your Team Leader will feed back to you and approve your marking or ask you to mark a further 10 standardisation scripts.

MARKING - GENERAL

PRE-STANDARDISATION

1. Mark strictly to the mark scheme and make no departure from it.

2. If you are in doubt about applying the mark scheme, or if you feel a candidate is being unfairly penalised by the application of the mark scheme, consult your Team Leader, preferably using the RMA^3 messaging system.

3. Any **blank pages** and the **formula page** are included in the first zone. **These must be checked for responses by scrolling down and then adding the SEEN annotation.** If a blank page contains no questions and some relevant working follow the 'Link pages to response' procedure.

4. If you receive a script with **Additional Objects**, please **add a SEEN annotation to each page to show that you have checked these pages.**

5. Award NR (No Response)
   - if there is nothing written at all in the answer space, or
   - if there is only a comment which does not in any way relate to the question being asked (e.g. 'can't do', 'don't know')
   - if there is only a mark which is not an attempt at the question (e.g. a dash, a question mark).
     Award 0 marks
   - if there is an attempt that earns no credit, including copying out the question.

6. In most parts of questions, the correct answer for that part will score full marks. However where **nfww** is used the answer must not come from wrong working.

7. If the response in the answer space is incorrect, appropriate marks can be awarded by looking back at the working.
   The marks available in these cases are:
   M for any correct method applied to the appropriate numbers, even though a numerical error may be involved,
   A for an accurate result within the working *after* the relevant **M** mark has been earned,
   B for a particular result, statement or expression identified in the scheme.
   SC for a special case.
8. When the answer space is blank, full marks can be awarded for the correct answer shown as the final working in the working space.
   Similarly, if the working space is blank, **M**, **A** or **B** marks can be awarded for appropriate working or results given in the answer space.

9. Where a candidate has crossed out a complete part of a question, it should be marked provided that it has not been replaced.

10. If two or more methods are offered, mark the method that leads to the answer on the answer line. If two or more answers are offered, mark the worst. Annotate appropriately if this is the case.

11. Method marks are for a full correct method but may be lost if subsequent incorrect method is shown.

12. Unless a particular method has been specified in the question, full marks may be awarded for any correct method. However, if a calculation is required then no marks will be awarded for a scale drawing.

PRE-STANDARDISATION

13. Transcription errors apply to numerical figures only. When the answer in the answer space is incorrect because of a clear transcription error of a correct answer then marks may be awarded. There must not be any possibility of further incorrect work having been done. Example 123 correct answer in working but transcribed at 132 in answer space – allow mark. NB 123 in working and 12.3 in the answer space is not a transcription error; neither is –123 in working and 123 in the answer space.

14. Where the answer in the answer space is incorrect because of a clear transcription error, then marks may be awarded.

15. Occasionally a candidate will misread a number in a question and use that value consistently throughout. Provided that number does not alter the difficulty or method required, award all marks earned and withhold 1 mark from the total for that part or from the A or B marks earned. M marks are still awarded in any case. Record this by using the **MR** annotation. This is only applied once in a whole question. MR is not applied when the candidate misreads his or her own figures – this is regarded as an error in accuracy and marked accordingly. Example scenario 1: If a candidate misreads a value in part (a) and then continues to use the same misread value in part (b), then the misread rule is only applied to part (a) and all marks in part (b) are available (followed through).
Example scenario 2: If a candidate misreads a value and uses it in only one part of a question e.g. in part (a) the value is misread but not in part (b) or vice versa, then the misread rules are applied to part (a) and part (b) is marked as normal in line with the mark scheme.

16. Unless specified in the question, answers may be given as fractions, decimals or in standard form. Other acceptable forms will be given in the mark scheme. However, it is likely that expressions that have not been evaluated, e.g. 1.5/6 will not be given full marks. Ignore superfluous zeros provided that the degree of accuracy is not affected.

17. Allow any sensible notation. Watch out for commas being used for decimal points and dots being used for products. Brackets may be seen to represent inequalities.

18. Anything in the mark scheme which is in square brackets […] is not required for the mark to be earned, but if present it must be correct.

19. For a decimal answer between 0 and 1, ignore the omission of the first zero e.g. answer of 0.418, accept .418

20. Answer spaces will usually have an appropriate unit. If a candidate clearly chooses and writes down a different unit, with a value that matches the correct answer, and the aim of the question is not affected, then allow full marks.

21. FT – a correct answer will score or follow through after an error.
Strict FT – you must follow through from their error. These will be indicated in the mark scheme.

ABBREVIATIONS IN MARK SCHEME AND ANOTATIONS IN RMA[3]

Abbreviation	Annotation in RMA[3]	Meaning
M	M0 M1 M2	Method marks - for a correct method applied to appropriate numbers.
A	A0 A1 A2	Accuracy marks – depend on M marks. Hence M0 A1 is not possible.
B	B0 B1 B2	Independent of method marks – for a correct final answer, a partially correct answer or a correct intermediate stage.
SC	SC	Marks given in special cases only when indicated in mark scheme.
FT	FT	Work can be followed through after an error.
isw	ISW	Ignore subsequent working (after correct answer obtained)
cao		Correct answer only
nfww		Not from wrong working
oe		Or equivalent
soi		Seen or implied

eeo		Each error or omission
dep		Dependent on the previous mark(s)
	BOD	Benefit of the doubt is given to the candidate
	^	Omission sign
	MR	Misread
	TE	Transcription error

The **M**, **A** and **B** etc annotations must be used on your standardisation scripts for responses that are not awarded either 0 or full marks.
It is not mandatory to use annotations for any other marking (unless stated in the mark scheme) though you may wish to use them in some circumstances.

ACCURACY

1. If a question asks for a particular level of accuracy then the mark scheme will include specific details.

2. In other cases, the following apply:
   - 3 sf correct on the answer line – allow full marks.
   - More than 3 sf on the answer line and correct (either rounded or truncated to 4 or more figure accuracy, in range provided) – allow full marks.
   - Less than 3 sf on the answer line but correct to 3 or more sf seen in the working – allow full marks even if rounded incorrectly.
   - 3 sf incorrect on the answer line but 4 or more correct (in range provided) seen in the working – allow full marks.
   - If the third sf is zero after the decimal point (eg 15.0) then allow marks for 2 sf answers.

   Example
   Suppose a calculator display correctly gives 6.3255532 and the general rubric on the front cover of the paper applies and the mark scheme applies the usual rules about 3 sf or more.
   The mark scheme will specify 6.33 or 6.325 to 6.326.
   The following answers **on the answer line** have been given.
   6.3 **A0** if no more accurate answer in working; **A1** if a correct, 3 sf or more accurate answer in working
   6.32 **A0** if no more accurate answer in working; **A1** if a correct, 3 sf or more accurate answer in working
   6.325 **A1** (in range)
   6.326 **A1** (in range)
   6.3255 **A1** (in range)

3. General principles are:
   - 2 sf answers will not imply method in most cases.
   - If the final answer on the answer line has clearly been spoiled from the 3sf or more answer seen in the working (e.g further processing, not just rounding errors) don't allow the marks.

4. Follow through:
   - If an accuracy FT is available in another part of the question, then give the FT mark for a correct follow through from a value which has lost the accuracy mark in the first part.
   - However a correct value from the first part may have been given the accuracy mark but has then been rounded incorrectly and this has been condoned. If the wrongly rounded value is used in the new part and leads to an incorrect answer, even if correctly followed through, then this should not receive the accuracy mark here and should not be treated as a FT case.

   Examples

The answer in the mark scheme for **(a)** is	6.33 or 6.325 to 6.326.
The mark scheme for **(b)** is	*their* **(a)** × 25 **M1**
	158 or 158.3 or 158.1 to 158.2 **A1**FT

   Example 1
   (a) 6.3 on answer line, no more accurate answer in working **A0**
   (b) 6.3 × 25 = 157.5 **M1A1**FT (FT as accuracy mark lost in part **(a)**)
   Example 2
   (a) 6.3 on answer line, 6.33 in working **A1**
   (b) 6.3 × 25 = 157.5 **M1A0** (No FT as accuracy mark given in **(a)** and the wrongly used value has been used in **(b)**)

5. Money
   - Exact answer $123.45 — $123.5 and $123 on the answer line score A0, unless exact answer seen in working, in which case score A1.
   - Exact answer $670.40 — $670.4 on the answer line scores A1
   - Inexact answer $387.25666… — $387.26 or $387.3 or $387 on the answer line score A1
     ie correctly rounded to 3 sf or better

6. Exact answers involving π and $\sqrt{\ }$
   - Exact answer 2.345 π — Mark scheme will indicate if answers must be given as integers due to context.
     allow A1 for 2.345 π on the answer line
     allow A0 for 2.35 π
   - Exact answer $\sqrt{23}$ — Mark scheme will indicate if answers must be given as integers due to context.
     Scores A1 if the question is not set in context and the √(prime number) is given on the answer line.

PRE-STANDARDISATION

Surd answers which simplify need not be simplified e.g. $\sqrt{12}$ or $2\sqrt{3}$ are acceptable unless the mark scheme states otherwise.

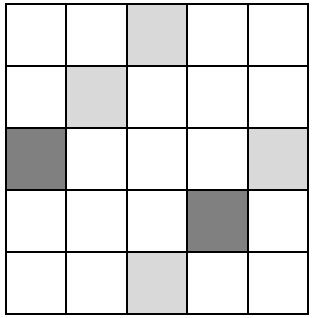
REPORT

Please send a brief report on the work of your candidates to your Team Leader by e-mail **before the final marking date.** Your report should cover candidate responses to questions and any other matters that you wish to draw to the attention of Centres.

General Principles

If final answer in main column, no transcription errors allowed.

Algebraic negative answers – allow transcription error if positive on answer line as long as the negative answer given in the working.

Question	Answer	Marks	Partial Marks	Guidance
1	2 or 7	**1**		
2	$3y^2 + 5y$ or $y(3y + 5)$ final answer	**2**	**B1** for answer $3y^2 + ky$ or $ky^2 + 5y$ or for correct answer seen then spoilt	
3		**1**		
4	2.6 cao	**2**	**B1** for 2.64 or 2.635 to 2.636 If 0 scored**, SC1** for rounding *their* more accurate value correctly to 1 decimal place.	
5	[*C* =] (7.5, 3) [*D* =] (9.5, 6.5)	**3**	**B2** for [*C* =] (7.5, 3) or [*D* =] (9.5, 6.5) or **M1** for length of rectangle = 3.5 or width of rectangle = 2 soi	M1 implied by one correct value in coordinate or may be on diagram e.g. [*C* =] (7.5, *k*)

Question	Answer	Marks	Partial Marks	Guidance
6	565.8	**3**	**M1** for 12 × 40 oe **M1** for [5.5 ×] 12 × $\left(1+\frac{30}{100}\right)$ oe	Allow M2 for e.g. 12 × 45.5 + 0.3 × 12 [×5.5] M1 implied by 15.6[0] or 78
7(a)	4 points correctly plotted	**2**	**B1** for 2 points correctly placed	Accuracy ± ½ small square radially Use overlay as a guide
7(b)	Positive	**1**		Ignore embellishments e.g. strong
7(c)	Ruled line of best fit	**1**		Use overlay for tolerance
7(d)	FT reading at 14 weeks from *their* line of best fit with positive gradient	**1**		Tolerance 0.1 of *their* reading at 14
8(a)	2.1	**2**	**B1** for 4.2 or **M1** for answer their written measurement × 0.5 correctly evaluated	Accept answers 2 to 2.2 [km] For B1 accept 4 to 4.4 [cm]
8(b)	Correct construction for position of *L* with intersecting arcs 8.8 cm from *A* and 6.6 cm from *B*	**3**	**B2** for correct position of *L* indicated with no/incorrect arcs or **B1** for 8.8 cm or 6.6 cm soi If 0 scored, **SC1** for position of *L* with arcs 4.4 cm and 3.3 cm	Tolerance ± 2 mm
9(a)	7.09×10^{-3}	**1**		
9(b)	1.6×10^{9}	**2**	**B1** for 16×10^{8} oe	
10(a)(i)	Image drawn at (2, 0), (1, –1) and (3, –3)	**2**	**B1** for reflection in $y = k$ or for reflection in $x = 1$	Mark intention, use overlay as a guide in part (a)(i) and (ii)
10(a)(ii)	Image drawn at (–4, 3), (–5, 4) and (–3, 6)	**2**	**B1** for translation by $\begin{pmatrix}-6\\k\end{pmatrix}$ or by $\begin{pmatrix}k\\1\end{pmatrix}$	

Question	Answer	Marks	Partial Marks	Guidance
10(b)	Rotation 90° anticlockwise oe [centre] (3, –1)	**3**	**B1** for each	Not turn Accept 90, 270 clockwise, – 270, 90 counterclockwise Condone omission of brackets in coords, accept position vector $\begin{pmatrix} 3 \\ -1 \end{pmatrix}$
11(a)	1842.59	**2**	**M1** for $1500 \times \left(1+\frac{4.2}{100}\right)^5$	For 2 marks accept 1840, 1843, 1842.6, 1842.59…
11(b)	6.5 [0…]	**3**	**M2** for $\sqrt[11]{2}$ oe or **M1** for $[k\times]x^{11} = 2[\times k]$ oe	M2 implied by 1.065[0…] or 106.5[0…] e.g.uses a value for the investment $1500\ x^{11} = 3000$
12	267 or 267.0 to 267.1	**2**	**M1** for $\pi\times12\times5+\pi\times5^2$	Accept 85π as final answer

Question	Answer	Marks	Partial Marks	Guidance
13	$n^3 + 4$ oe final answer and $\frac{11-n}{n+2}$ oe final answer and 2^{n+1} oe final answer	**6**	**B2** for $n^3 + 4$ oe final answer or **B1** for n^3 or for 3rd diff = 6 or for correct answer seen then spoilt **B2** for $\frac{11-n}{n+2}$ oe final answer or **B1** for numerator or denominator of fraction correct or for correct answer seen then spoilt **B2** for 2^{n+1} oe final answer or **B1** for 2^n or for correct answer seen then spoilt	Condone consistent use of other variable, $n =$ e.g. oe $2(2^n)$
14(a)	17	**1**		
14(b)	$-7 + 8x$ final answer	**2**	**M1** for $5 - 4(3 - 2x)$	
14(c)	$\frac{5-x}{4}$ oe final answer	**2**	**M1** for $x = 5 - 4y$ or $y - 5 = 4x$ or $\frac{y}{5} = \frac{5}{4} - x$ or better	

Question	Answer	Marks	Partial Marks	Guidance
15(a)	1.60625	**4**	**M1** for mid-points **soi** (1.35, 1.55, 1.65, 1.8) **M1** for use of ©*fm* with *m* in correct interval including both boundaries **M1 dep** (dep on 2nd M1) for ©*fm* ÷ 80	Accept 1 $\frac{97}{160}$, 1.61. 1.606[2] or 1.6063 nfww isw answer $1.6 < h \leq 1.7$ after correct answer seen Condone one error or omission Condone one further error or omission 16.2 + 31 + 56.1 + 25.2 [= 128.5] (no more than two values not in interval) Accept (12 + 20 + 34 + 14) for 80
15(b)	Correct histogram	**3**	**B2** for 3 correct blocks or **B1** for 2 correct blocks If 0 scored, **SC1** for 3 correct freq densities soi (40, 200, 340, 70)	Accuracy – bars must touch correct horizontal line for most of interval
16(a)	0	**1**		
16(b)	Tangent to curve at time = 7.5 seconds	**B1**		No daylight between tangent and curve at 7.5
	0.25 to 0.4	**B1**	Dep on tangent correct or close attempt	

Question	Answer	Marks	Partial Marks	Guidance
16(c)	$6\frac{2}{3}$ oe or 6.67 or 6.666 to 6.667	**3**	**M2** for $10 \times 8 + \frac{5\times 8}{2}$ oe or **M1** for attempt at one relevant area under graph for time between 15 and 30 seconds	
17(a)	287	**2**	**M1** for North line at *C* with angle 35 or 145 marked on diagram at *C*	
17(b)	$\sqrt{65^2+95^2-2\times 65\times 95\cos 38}$	**M2**	**M1** for $65^2+95^2-2\times 65\times 95\cos 38$	3518
	59.31…	**A1**		If M1 and then 59.31…, allow M2A1
17(c)	244.5 to 244.6	**4**	**B3** for **[***BAC* **=**] 99.5 or 99.6 or 99.49 to 99.57… or for answer 225.4 to 225.5 **M2** for $\frac{95\sin 38}{59.3}$ oe or **M1** for $\frac{59.3}{\sin 38}=\frac{95}{\sin A}$ oe	Accept 245 for 4 marks STM consider longer methods e.g. finds angle *B* first - angle *B* is 42.4
18(a)	$2(3a-7)(3a+7)$ final answer	**2**	**M1** for $2(9a^2-49)$ or $(6a-14)(3a+7)$ or $(6a+14)(3a-7)$	

Question	Answer	Marks	Partial Marks	Guidance
18(b)	$2x^3 + 3x^2 - 18x + 8$ final answer	**3**	**B2** for correct expansion unsimplified or for simplified 4 term expression of correct form with 3 terms correct or **B1** for one pair of brackets expanded with at least 3 terms out of 4 correct	e.g. $2x^3 - x^2 + 8x^2 - 4x - 4x^2 + 2x - 16x + 8$ $2x^2 - x + 8x - 4$ $2x^2 - 4x - x + 2$ $2x^2 - 2x + 4x - 8$ May be seen in a larger train of terms
19	113.6 and 246.4	**3**	**B2** for one correct angle or **M1** for $\cos x = -0.4$ oe If M0 or 0 scored **SC1** for 2 angles that add to 360	Condone 114 and 246 or 113.578… and 246.4218…. for 3 marks or for B2 Not multiples of 90.
20	6.2	**3**	**M2** for $\frac{7800-50}{1240 \text{ to } 1260}$ or $\frac{7700 \text{ to } 7800}{1250}$ or **B1** for 7800 + 50 or 7800 – 50 or 1240 + 10 or 1240 – 10	

Question	Answer	Marks	Partial Marks	Guidance
21	$\frac{14}{9}\mathbf{m}+\frac{4}{9}\mathbf{n}$ oe simplified final answer	**4**	**B3** for $2\mathbf{m} + \frac{4}{9}(-\mathbf{m}+\mathbf{n})$ oe or **M2** for $\overrightarrow{AE} = \frac{4}{9}(-\mathbf{m}+\mathbf{n})$ soi or $\overrightarrow{BE} = \frac{5}{9}(\mathbf{m}-\mathbf{n})$ soi **M1** for $\overrightarrow{OB} = \mathbf{m} + \mathbf{n}$ or $\overrightarrow{AB} = \mathbf{n} - \mathbf{m}$ soi or for a correct vector route along the lines on the diagram	e.g. B3 for $\mathbf{p} + \mathbf{q} + \frac{5}{9}(\mathbf{p} - \mathbf{q})$ Not just for $\overrightarrow{OE}$
22	$2x^2 - 5x - 15$ [= 0] or $2y^2 - 34y + 144 = 0$ oe	**M2**	**M1** for $4x + 12 = 2x^2 - x - 3$ or better or $y = 2\left(\frac{y-12}{4}\right)^2 - \left(\frac{y-12}{4}\right) - 3$ or better	For M2 accept equivalent 3 term expression
	$\frac{-(-5)\pm\sqrt{(-5)^2-4(2)(-15)}}{2(2)}$ oe	**M2**	**FT** *their* 3-term quadratic or **M1** for $\sqrt{(-5)^2-4(2)(-15)}$ or better or for $\frac{-(-5)+\sqrt{q}}{2\times 2}$ or $\frac{-(-5)-\sqrt{q}}{2\times 2}$	$\frac{5\pm\sqrt{145}}{4}$ Do not accept Sq root to cover – sign, division to cover ± sign, but can recover with working seen STM consider complete square method

Question	Answer	Marks	Partial Marks	Guidance
	(4.26 , 29.04) and (– 1.76, 4.96)	**B2**	**B1** for one correct pair or both x-values correct or both y – values correct or both correct to one decimal place or better	Condone more accurate values for B2 and B1 (4.260…, 29.041 to 29.042) and (– 1.760…, 4.958…)
23	9836 to 9844	**7**	**B2** for angle at centre = 2 × 78.5 or 2 × 78.46 or **M1** for $\cos x = \frac{3-2.5}{2.5}$ **M2dep** for $\frac{360-their\theta}{360}\times\pi\times2.5^2$ or **M1dep** for $\frac{their\,\theta}{360}\times\pi\times2.5^2$ **M1dep** for $\frac{1}{2}\times2.5\times2.5\times\sin(their\,\theta)$ **M1dep** for *their* area × 800	156.9 or 156.92 to 156.93 Implied by x = 78.5 or 78.46 **Dep** *their* θ is angle at centre from trig attempt **Dep** on M1 earned for an area