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CAMBRIDGE
International Education

Cambridge IGCSE™

MATHEMATICS **0580/42**

Paper 4 (Extended) **May/June 2026**

MARK SCHEME

Maximum Mark: 100

Published

This mark scheme contains the instructions and marking guidance that our examiners used to mark candidate responses for this component.

Before they start marking, examiners complete a standardisation process. They review a range of candidate responses and discuss the mark scheme in detail to agree which answers can and cannot be accepted. Examiners award marks where it is clear that candidate responses have met the requirements of the mark scheme. These requirements may vary between different components or different versions of the same component, depending on the exact requirements of the question and the candidate responses seen during the standardisation process.

Sometimes, our mark schemes may allow marks to be awarded to responses which contain elements that are factually incorrect or for content not covered by the syllabus. We do this in response to the demands of a specific question to support candidates and make sure that our assessments are fair. However, these allowances should not be used as a guide for teaching and learning.

We cannot discuss the mark scheme with schools, and we recommend that schools read the mark scheme together with the assessment material and the Principal Examiner Report for Teachers.

This document consists of **18** printed pages.

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General marking principles

All examiners must apply these marking principles when marking candidate responses.

1	Examiners must award marks for each response in line with: • the specific **content** defined in the mark scheme • the specific **skills** defined in the mark scheme or in the level descriptions • the **standard of response** required as exemplified by the standardisation scripts.
2	Examiners must award **whole marks** (not half marks, or other fractions).
3	Examiners must award marks **positively**. This means that: • marks are not deducted for errors or omissions • marks are awarded for correct/valid answers as defined in the mark scheme and also for **other valid answers** which go beyond the scope of the syllabus and mark scheme referring to your team leader as appropriate • the quality of spelling, punctuation and grammar are judged **only** when the mark scheme indicates that these features are **specifically assessed** in the question. However, the meaning of all responses must be unambiguous.
4	Examiners must **consistently** apply the requirements of the mark scheme and any rules for what to do when candidates have not followed instructions correctly.
5	Examiners must use the **full range of marks** defined in the mark scheme, unless limited by the quality of the candidate responses seen.
6	Examiners must award marks according to the mark scheme and **must not** award marks with grade thresholds or grade descriptions in mind.

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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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Annotations guidance for centres

Examiners use a system of annotations as a shorthand for communicating their marking decisions to one another. Examiners are trained during the standardisation process on how and when to use annotations. The purpose of annotations is to inform the standardisation and monitoring processes and guide the supervising examiners when they are checking the work of examiners within their team. The meaning of annotations and how they are used is specific to each component and is understood by all examiners who mark the component.

We publish annotations in our mark schemes to help centres understand the annotations they may see on copies of scripts. Note that there may not be a direct correlation between the number of annotations on a script and the mark awarded. Similarly, the use of an annotation may not be an indication of the quality of the response.

The annotations listed below were available to examiners marking this component in this series.

Annotations

Annotation	Meaning
^	More information required
A0	Accuracy mark awarded zero
A1	Accuracy mark awarded one
A2	Accuracy mark awarded two
A3	Accuracy mark awarded three
B0	Independent mark awarded zero
B1	Independent mark awarded one
B2	Independent mark awarded two
B3	Independent mark awarded three
BOD	Benefit of the doubt

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Annotation	Meaning
C	Communication mark
	Incorrect
FT	Follow through
Highlighter	Highlight a key point in the working
ISW	Ignore subsequent work
M0	Method mark awarded zero
M1	Method mark awarded one
M2	Method mark awarded two
M3	Method mark awarded three
MR	Misread
O	Omission
Off-page comment	Allows comments to be entered at the bottom of the RM marking window and then displayed when the associated question item is navigated to.
On-page comment	Allows comments to be entered in speech bubbles on the candidate response.
Pre	Premature rounding/approximation
SC	Special case
SEEN	Indicates that work/page has been seen
TE	Transcription error

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Annotation	Meaning
	Correct
	Correct answer from incorrect working

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MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

M Method marks, awarded for a valid method applied to the problem.

A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.

B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation 'dep' is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

Abbreviations

awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
nfww	not from wrong working
oe	or equivalent
rot	rounded or truncated
SC	Special Case
soi	seen or implied

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Question	Answer	Marks	Partial Marks	Guidance
1	75	**2**	**M1** for $\frac{180-30}{2}$ oe	
2(a)	1	**1**		
2(b)	2	**1**		Do not accept 2, 2 as answer.
2(c)	1.8 or $1\frac{4}{5}$ cao	**3**	**M2** for $\frac{0\times5+1\times14+2\times10+3\times8+4\times1+5\times2}{5+14+10+8+1+2}$ oe or better or **M1** for $0 \times 5 + 1 \times 14 + 2 \times 10 + 3 \times 8 + 4 \times 1 + 5 \times 2$ oe	For 3 marks, not $\frac{9}{5}$ alone and not answer 2 after 1.8 shown. For M2 and M1, condone 1 error in the products. M2 implied by $\frac{72}{40}$ [0 +] 14 + 20 + 24 + 4 + 10 M1 implied by 72
3	Correct triangle with arcs	**2**	**B1** for correct triangle with incorrect or no arcs or for two correct intersecting arcs or for acceptable point *C* clearly indicated with no arcs or incorrect arcs If 0 scored, **SC1** for triangle with arcs but lines interchanged	Accuracy ± 2 mm
4	18	**3**	**M2** for $\frac{1260-\frac{35}{100}\times1260}{45.5}$ oe or **M1** for $\frac{35}{100}\times1260$ oe	For M2 or M1, do not accept 35% × 1260 alone. M1 implied by 819 or 441
5	(5, 2)	**2**	**B1** for (5, *k*) or (*k*, 2)	

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Question	Answer	Marks	Partial Marks	Guidance
6	40.6 or 40.61 to 40.62…	**3**	**M2** for $\frac{\pi \times 15.8}{2} + 15.8$ oe or **M1** for $\frac{\pi \times 15.8}{2}$ oe	Mark at most accurate. For M2 or M1 condone use of 3.14 or $\frac{22}{7}$ for π. M2 implied by answer 40.60 to 40.63 M1 implied by $\frac{79}{10}\pi$ or 24.8 to 24.83
7(a)	3240 or 3237[.00…]	**2**	**M1** for $2500 \times \left(1 + \frac{4.4}{100}\right)^6$ oe	Mark at most accurate, accept 3237.0. Do not award M1 for 2500 × (104.4%)^6 alone. Method spoiled if answer interest only, e.g. 737… or 740.
7(b)	3.79 or 3.790…	**3**	**M2** for $\sqrt[5]{\frac{5420}{4500}}$ oe or **M1** for $5420 = 4500 \times m^5$ oe	Mark at most accurate. M2 implied by 1.04, 1.037[9…] or 1.038 or 104, 103.7[9…] or 103.8 or 0.0379… Accept 1.2[04…] for 5420 ÷ 4500 Allow any m

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Question	Answer	Marks	Partial Marks	Guidance
8(a)	–5, –3, 1.1	**3**	**B1** for each correct value	Accept 1.12[5] or 1.13 or $\frac{9}{8}$ oe
8(b)	Correct smooth curve	**4**	**B3FT** for 8 correct points or **B2FT** for 6 correct points or **B1FT** for 4 correct points	Accuracy ± ½ small square radially. isw other curves/plots as could be for part (c). Condone slight feathering in no more than 2 sections. No excessively thick curve or incorrect curvature. Curve must not go to the right of $x = 3$ before (3, 7) and not more than 1 cm vertical at end points. If not 4 marks, mark plots using same tolerance as the curve. If plot is large, mark centre of plot. Curve can imply any missing plots.
8(c)	$y = x - 3$ ruled	**M2**	**M1** for the correct equation soi e.g. [$y =$] $x - 3$ or $y = x + k$ or $y = kx - 3$ drawn	For M2, line must cross *their* curve in all places Accuracy check at (0, –3) and (2, –1) ± ½ small square radially. Accept for M1 $x^3 - 2x^2 - 2 = x - 3$. Do not accept for M1 $y = -3$.
	–0.9 to –0.7, 0.5 to 0.6, 2.2 to 2.35	**A2**	**A1** for any two values If M0 or M1 scored, **SC1** for 3 correct values	A2 and A1 dep on M2

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Question	Answer	Marks	Partial Marks	Guidance
9	7.2, $7\frac{1}{5}$ or $\frac{36}{5}$	**3**	**M1** for eliminating fractions e.g. $3(w + 8) = 4(2w – 3)$ or better **M1** for reaching $24 + 12 = 8w – 3w$ or better FT *their* first step in eliminating fractions	Allow M1 for equation with both sides over common denominator. Allow recovery from omission of brackets. M1 dep on equation of form $aw + b = cw + d$ ($a, b, c, d \neq 0$)
10(a)	18	**2**	**M1** for $\frac{54}{75}[\times k]$ oe where $k = 25$ or 100 or $\left(1-\frac{10}{100}\right)\times\left(1-\frac{25}{100}\right)$ oe	Mark at most accurate. M1 implied by 0.72 or 72 M1 implied by 0.675 or 67.5% but not 67.5 alone
10(b)	80	**2**	**M1** for $\left(1-\frac{10}{100}\right)\times\left(1-\frac{25}{100}\right)\times n = 54$ oe or better	Mark at most accurate. e.g. $\frac{54}{90\times 0.75}\times 100$ Working for (b) may be seen in part (a). Give credit if it is used in part (b)
11	6.87 or 6.873…	**2**	**M1** for $\frac{XY}{12.4} = \tan 29°$ oe	Mark at most accurate. Alternative method allow M1 at implicit stage for XY.

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Question	Answer	Marks	Partial Marks	Guidance
12	19 January nfww	**3**	**B2** for 8.7… or 9 [days] nfww OR **M2** for $150 \times \left(1-\frac{5}{100}\right)^{8}$ correctly evaluated oe or $150 \times \left(1-\frac{5}{100}\right)^{9}$ correctly evaluated oe or 0.95^{8} and $\frac{96}{150}$ correctly evaluated or 0.95^{9} and $\frac{96}{150}$ correctly evaluated or **M1** for $150 \times \left(1-\frac{5}{100}\right)^{n}$ oe accept n or where value $n > 1$ or $\left(1-\frac{5}{100}\right)^{n} < \frac{96}{150}$ oe (allow =, >, ⩽, ⩾)	For 19 January accept e.g. 19/1, 1/19. For 3 marks if exponential method used and correct answer then do not class inaccurate values as wrong working. For method do not accept e.g. $150 \times (95\%)^{n}$ alone. Implied by 99[.5…] For M2 accept $n \log\left(1-\frac{5}{100}\right) = \log\left(\frac{96}{150}\right)$ or better. Implied by 94[.5…] Implied by 0.66[3...] and 0.64 Implied by 0.63[0…] and 0.64 M1 implied by any value in 2nd column to 3sf or better with 0.64, or any value in 3rd column to 4sf rounded or truncated

n	**0.95^{n}**	**150×0.95^{n}**
2	0.9025	135.375
3	0.857375	128.60625
4	0.814506	122.17594
5	0.773781	116.06714
6	0.735092	110.26378
7	0.698337	104.75059
10	0.598736	89.81054

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Question	Answer	Marks	Partial Marks	Guidance
13	7	**3**	**M2** for $6 \times 10.5 = 9 \times y$ OR **M1** for $y = \frac{k}{x}$ oe **M1** for $y = \frac{\textit{their } k}{9}$	e.g. $\frac{k}{10.5} = 6$ *their* numerical k
14	294.2…	**2**	**B1** for 65.79[5…] or 65.8[0] seen	Mark at most accurate. For 2 marks accept answer 294. For 2 marks accept 5.13 or 5.134 to 5.135 radians or ^{c}. For B1 accept 1.15 or 1.148… radians or ^{c}.
15	$\frac{11x-26}{(x+2)(x-4)}$ or $\frac{11x-26}{x^2-2x-8}$ final answer	**3**	**B1** for common denominator of $(x + 2)(x – 4)$ or $x^2 – 4x + 2x – 8$ oe isw **B1** for $8(x – 4) + 3(x + 2)$ or better seen	Condone omission of final bracket in denominator for 3 marks or B1. B1 allow if correct in two separate fractions. B1 allow if correct in two separate fractions.
16(a)	4	**1**		
16(b)	2541 cao	**2**	**M1** for $\frac{1}{3} \times 16.5^2 \times 28$ oe	Do not accept e.g. 2540.7… = 2541 for 2 marks. Answer 2540 implies M1

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Question	Answer	Marks	Partial Marks	Guidance
16(c)	30.3 or 30.33…	**4**	**M3** for $28^2 + \left(\frac{16.5}{2}\right)^2 + \left(\frac{16.5}{2}\right)^2$ oe or **M2** for $[BF^2 =] \left(\frac{16.5}{2}\right)^2 + \left(\frac{16.5}{2}\right)^2$ oe or $[BF^2 =] 16.5^2 \div 2$ oe or $[BF =] \frac{\sqrt{16.5^2 + 16.5^2}}{2}$ or $\frac{BF}{16.5} = \sin 45$ or $\frac{BF}{16.5} = \cos 45$ or better or **M1** for $BD^2 = 16.5^2 + 16.5^2$ oe	Mark at most accurate. For M2 do not accept if method or value for *BF* is associated with the wrong side. Accept e.g. *x*, *FC* for *BF* (but not an incorrect side). $BF^2 = 136.125$ $BF = \frac{33\sqrt{2}}{4}$ = 11.7 or 11.66 to 11.67 For M1 it must be clearly *BD*, may be indicated on diagram if used in this part. $BD^2 = 544.5$ $BD = \frac{33\sqrt{2}}{2}$ = 23.3 or 23.33…
16(d)	67.28 to 67.53…	**2**	**M1** for $\sin(...) = \frac{28}{their\,(c)}$ oe	Mark at most accurate. M1 accept e.g. $\tan(...) = \frac{28}{their\,BF}$ or $\cos(...) = \frac{their\,BF}{their\,(c)}$ *their BF* ≠ 28 or 16.5 or 8.25 or 23.3[3…]
17(a)	8	**1**		
17(b)	$\frac{x-7}{2}$ oe final answer	**2**	**M1** for $y - 7 = 2x$ or $\frac{y}{2} = \frac{7}{2} + x$ or $x = 7 + 2y$ or better	For 2 marks accept e.g. $\frac{7-x}{-2}$, $-\frac{7-x}{2}$ If answer $x - 7/2$ then check working and if fraction shown correctly allow 2 marks.

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Question	Answer	Marks	Partial Marks	Guidance
17(c)	16	**2**	**M1** for $64 \div 2^{\left(\frac{64}{2^x}\right)}$ oe or [gg(5) =] g(2) oe	For M1 e.g. $64 \div 2^{\left(\frac{64}{2^5}\right)}$, $\frac{64}{2^2}$, 2^4
17(d)	$\frac{1}{4}$ or 0.25	**2**	**M1** for g(8) oe e.g. $\frac{64}{2^8}$, 2^{-2}	
18(a)	$\frac{1}{2} \times (2x)(x) \sin 30$ leading to $\frac{1}{2}x^2$	**M1**	Accept $\frac{1}{2} \times 2x^2 \times \sin 30$ with no errors	Must show sin 30. Allow if in stages, e.g. $h = x \sin 30$ then area = $\frac{1}{2} \times 2x \times \frac{x}{2}$. Ignore units throughout Q18.
18(b)	$\frac{1}{2}x^2 = \frac{1}{2}(2x-6)(x-4)$	**M1**	Accept brackets expanded for M1	Accept for M1 $\frac{1}{2} \times (2x)(x) \sin 30 = \frac{1}{2}(2x-6)(x-4)[\sin 90]$. M1 may be done in stages.
	Correct expansion of $(2x-6)(x-4)$: $2x^2 - 8x - 6x + 24$ or better	**B1**	Accept correct expansion of $(x-3)(x-4)$ oe: $x^2 - 4x - 3x + 12$ or better	B1 M1 can be awarded in any order.
	leading to $x^2 - 14x + 24 = 0$	**A1**	dep on M1 B1 with no errors or omissions	isw attempts to solve/factorise.

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Question	Answer	Marks	Partial Marks	Guidance
18(c)	$(x – 2)(x – 12)$ [= 0]	**M2**	**M1** for $(x + a)(x + b)$ where $a + b = –14$ or $ab = 24$ or for partial factors $x(x – 2) – 12(x – 2)$ or $x(x – 12) – 2(x – 12)$	Working may be seen in part (b), allow credit for this if it is used in part (c). If factorisation shown isw other methods.
	72 cao	**B2**	**B1** for $x = 12$	For B1, accept 12 and 2 but no other values. If x-values are not shown, B1 may be implied by answer 72 and 2. Correct partial factors leading to answer 72 implies M2 B2. Correct partial factors leading to $x = 12$ implies M2 B1.
19(a)	12.9375	**4**	**M1** for midpoints soi (2.5, 7.5, 15, 30) **M1** for use of Σft with t in correct interval including both boundaries oe **M1** (dep on 2nd M1) for $\Sigma ft \div 40$	Mark at most accurate. isw answer $10 < t \leqslant 20$ after correct answer seen. Accept $12\frac{15}{16}$, 12.9, 12.93, 12.94, 12.937 and 12.938 nfww. Condone one error or omission. Condone one further error or omission. Not more than one midpoint outside interval. Do not accept use of four class widths for midpoints, t, of 5, 5, 10 and 20 $7.5 + 135 + 195 + 180 = 517.5$ Accept $3 + 18 + 13 + 6$ for 40
19(b)	Correct histogram	**3**	**B1** for each correct bar If 0 scored, **SC1** for frequency densities 3.6, 1.3, 0.3 oe soi	Accuracy – height of bar must touch correct horizontal line for at least half of interval, condone good freehand. Condone omission of vertical line at $t = 40$. Accept e.g. $\frac{18}{5}, \frac{13}{10}, \frac{6}{20}$

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Question	Answer	Marks	Partial Marks	Guidance
20(a)	257 cao	**1**		
20(b)	87.9 or 87.90 to 87.91	**3**	**M2** for $\sqrt{38.2^2+86.8^2-2\times38.2\times86.8\cos 79}$ oe OR **M1** for $38.2^2+86.8^2-2\times38.2\times86.8\cos 79$ oe **A1** for 7728.[…]	Mark at most accurate. M2 may be done in stages. Allow M2 after correct substitution in cosine rule and square root soi later.
20(c)	29.2 or 29.20 to 29.21 nfww	**6**	**B3** for $\angle ACB = 32.5$ or 32.49… OR **M2** for $[\sin ACB =] \frac{50.3\sin 112}{86.8}$ oe or **M1** for $\frac{\sin ACB}{50.3}=\frac{\sin 112}{86.8}$ oe AND **M2** dep on at least M1 for $\frac{\text{distance}}{50.3}=\sin(68-their\angle ACB)$ oe or $\frac{1}{2}\times86.8\times50.3\times\sin(theirBAC)=\frac{1}{2}\times86.8\times h$ oe or **M1** for recognition of shortest distance perpendicular to AC soi	Mark at most accurate. nfww, do not accept 29.2 from 43.4tan 34 [sin ACB =] 0.537 or 0.5372 to 0.5373 Alternative method using BC and sin($theirACB$) BC = 54.4 or 54.36 to 54.38 May be on diagram – must indicate right angle. Accept $\frac{1}{2}\times86.8\times h$ seen. Allow M1 for e.g. $\frac{\text{distance}}{50.3}=\sin(theirBAC)$ provided BAC is stated or shown on diagram.

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Question	Answer	Marks	Partial Marks	Guidance
21	6 nfww	**3**	**M2** for $\frac{130 \text{ to } 140}{22 + 0.5}$ or $\frac{140 - 5}{22 \text{ to } 23}$ oe or **M1** for 145 or 135 or 22.5 or 21.5 oe seen	Correct method is $\frac{135}{22.5}$ Accept 140 + 5 or 140 – 5 or 22 + 0.5 or 22 – 0.5.
22	$\frac{4x}{x-3}$ final answer	**3**	**B1** for $8x(x + 3)$ **B1** for $2(x – 3)(x + 3)$ or $(2x – 6)(x + 3)$ or $(2x + 6)(x – 3)$	For B marks, condone omission of final bracket. For B1 accept e.g. $8(x + 0)(x + 3)$. After correct cancelling by 2 at any stage B1 for $4x(x + 3)$ B1 for $(x – 3)(x + 3)$

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