

INTERNATIONAL GCSE MATHEMATICS

9260/2C

Core Tier Paper 2C

Mark scheme

November 2023

Version: 1.0 Final



2 3 B Y 9 2 6 0 / 2 C / M S

Mark schemes are prepared by the Lead Assessment Writer and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation events which all associates participate in and is the scheme which was used by them in this examination. The standardisation process ensures that the mark scheme covers the students' responses to questions and that every associate understands and applies it in the same correct way. As preparation for standardisation each associate analyses a number of students' scripts. Alternative answers not already covered by the mark scheme are discussed and legislated for. If, after the standardisation process, associates encounter unusual answers which have not been raised they are required to refer these to the Lead Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of students' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

Further copies of this mark scheme are available from oxfordaqaexams.org.uk

Copyright information

OxfordAQA retains the copyright on all its publications. However, registered schools/colleges for OxfordAQA are permitted to copy material from this booklet for their own internal use, with the following important exception: OxfordAQA cannot give permission to schools/colleges to photocopy any material that is acknowledged to a third party even for internal use within the centre.

Copyright © 2023 OxfordAQA International Examinations and its licensors. All rights reserved.

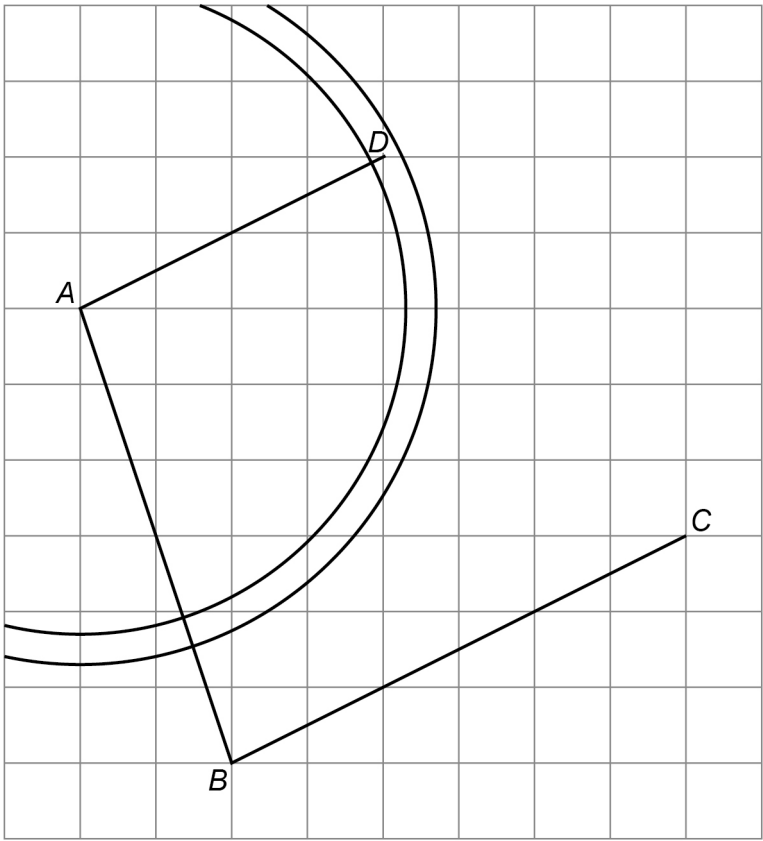
Key to mark types and abbreviations

M	Method marks are awarded for a correct method which could lead to a correct answer.
A	Accuracy marks are awarded when following on from a correct method. It is not necessary to always see the method. This can be implied.
B	Marks awarded independent of method.
ft	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
SC	Special case. Marks awarded for a common misinterpretation which has some mathematical worth.
M dep	A method mark dependent on a previous method mark being awarded.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
oe	Or equivalent. Accept answers that are equivalent. eg accept 0.5 as well as $\frac{1}{2}$
[a, b]	Accept values between a and b inclusive.
[a, b)	Accept values $a \leq \text{value} < b$
3.14 ...	Accept answers which begin 3.14 eg 3.14, 3.142, 3.1416
Use of brackets	It is not necessary to see the bracketed work to award the marks.

Q	Answer	Mark	Comments
1	Grey	B1	
	Additional Guidance		
	Grey 8		B1
	8		B0

Q	Answer	Mark	Comments
2	0.68	B1	
	3(%)	B1	
	$\frac{7}{4}$ or $1\frac{3}{4}$	B1	oe fraction or mixed number eg $\frac{175}{100}$ or $1\frac{75}{100}$

Q	Answer	Mark	Comments
3(a)	[80, 84]	B1	
	Additional Guidance		
	May be on diagram if answer line blank		

Q	Answer	Mark	Comments
3(b)	Ruled line, length [4.3, 4.7] cm, parallel to BC	B2	B1 Ruled line, length [4.3, 4.7] cm or ruled line parallel to BC
	Additional Guidance		
			
	D need not be labelled		
	The line must pass through the point 2 across and 1 up from A ($\pm 2\text{mm}$)		

Q	Answer	Mark	Comments
4(a)	38×2 or 76	M1	oe
	106(.00)	A1	condone 106.0

Q	Answer	Mark	Comments
4(b)	$4 \times 20 - 38 - 7.5(0)$ or $34.5(0)$	M2	oe M1 $38 + 7.5(0)$ or $45.5(0)$ or $4 \times 20 - 38$ or $80 - 38$ or 42 or $4 \times 20 - 7.5(0)$ or $80 - 7.5(0)$ or $72.5(0)$
	their $34.5(0) \div 3$	M1dep	dep on at least M1
	11.5(0)	A1	

Q	Answer	Mark	Comments
5	Linear scale from zero for frequency Bars at correct heights for their linear scale Equal widths for bars Equal gaps or no gaps for bars Vertical axis labelled Frequency or f or Number (of people) Bars labelled	B4	B3 five criteria B2 four criteria B1 three criteria
	Additional Guidance		
	Mark intention throughout		
	Condone 'People' for 'Frequency'		
	If axes and labels do not match the orientation of the bar chart then only criteria 2, 3 and 4 may be awarded		B1 max
	Not all values are needed for the frequency axis scale, but spacing must be linear. For example, only even numbers may be given		
	Condone a different gap between the vertical axis and the first bar to the other, equal gaps		
	If no scale is given, bars with heights 4, 7, 9 squares meet the height criterion		
	Allow heights criterion if their heights match their labels for their non-linear scale and it is linear between 1 and 9		
	Points only or vertical/horizontal lines can score the marks for criteria 1, 2, 4, 5 and 6		B3 max

Q	Answer	Mark	Comments
6	Alternative method 1		
	$\frac{3}{4} \times 120$ or 90	M2	oe eg $120 - 30$ M1 $\frac{1}{4} \times 120$ or 30 or $1 - \frac{1}{4}$ or $\frac{3}{4}$
	their $90 \div 11.25$	M1dep	oe repeated subtraction of 11.25 from 120 down to 30 (or below)
	8	A1	
	Alternative method 2		
	$1 - \frac{1}{4}$ or $\frac{3}{4}$	M1	oe
	$120 \div 11.25$ or $10\frac{2}{3}$	M1	oe
	their $\frac{3}{4} \times$ their $10\frac{2}{3}$	M1dep	oe dep on M2
	8	A1	

Q	Answer	Mark	Comments
7(a)	$(17 - 5) \div 2$ or $(17 + 5) \div 2$ or 11 or a correct trial of two integers with a difference of 5	M1	oe eg $8 + 13 = 21$
	6	A1	
	Additional Guidance		
	$11 + 6 = 17$		M1
	11 and 6 on answer line		M1A0

Q	Answer	Mark	Comments
7(b)	Alternative method 1		
	14:55 – 14:10 or 0:45 or 45(m)	M1	oe may be seen in adding on from 14:10 implied by 35(m)
	16:15 – (their 0:45 – 0:10) or 16:15 – (their 45 – 10)	M1dep	oe
	15:40	A1	SC2 15:20
	Alternative method 2		
	16:15 – 14:55 or 1 h 20m or 80(m)	M1	
	14:10 + their 1 h 20m + 10(m) or 15:30 + 10(m)	M1dep	
	15:40	A1	SC2 15:20
	Additional Guidance		
	SC2 is for R to S being 10 minutes longer than R to T		
	$14:55 + 5 + 1 \text{ hour} + 15 = 16:15$		M1

Q	Answer	Mark	Comments
8(a)	6	B1	

Q	Answer	Mark	Comments
8(b)	9	B1	

Q	Answer	Mark	Comments
8(c)	cylinder and cone	B2	either order B1 cylinder or cone

Q	Answer	Mark	Comments
9	Always true Never true Sometimes true Always true	B4	B1 each correct answer
	Additional Guidance		
	A tick and a cross in the same row – mark the tick		
	Allow any unambiguous indication		

Q	Answer	Mark	Comments
10(a)	$1 \times 4 (+) 2 \times 5 (+) 3 \times 7 (+) 4 \times 6 (+) 5 \times 8$ or 99	M1	oe eg 4 (+) 10 (+) 21 (+) 24 (+) 40 allow one error or omission
	their $99 \div 30$ or $\frac{33}{10}$ or $3\frac{3}{10}$	M1dep	oe
	3.3	A1	SC2 60.3(3...)
	Additional Guidance		
	SC2 is for omitting the brackets in the division by 30		

Q	Answer	Mark	Comments
10(b)	$5 + 7 + 6 + 8$ or $30 - 4$ or 26	M1	oe
	$\frac{26}{30}$ or $\frac{13}{15}$ or 0.866... or 0.87 or 86.6... % or 87%	A1	oe fraction, decimal or percentage
	Additional Guidance		
	Ignore any attempt at simplification or conversion after correct answer seen		M1A1

Q	Answer	Mark	Comments
11	$360 - 310$ or 50	M1	implied by 130 may be on diagram
	$(180 - \text{their } 50) \div 2$ or $130 \div 2$	M1dep	
	65	A1	
	Additional Guidance		
	If answer line blank M1M1A1 may be awarded for 65 in correct position on diagram		

Q	Answer	Mark	Comments
12(a)	$7^2 - 5^2 = (7 + 5) \times 2$	B1	
	24	B1	

Q	Answer	Mark	Comments
12(b)	$10^2 - 8^2 = (10 + 8) \times 2 = 36$	B1	

Q	Answer	Mark	Comments
12(c)	m and n are both odd	B1	

Q	Answer	Mark	Comments
13	720 mm^3 or 0.72 cm^3	B2	B1 720 or mm^3

Q	Answer	Mark	Comments
14(a)	[76, 78]	B1	implied by answer [5.4, 5.6]
	Correct value for their number of pounds	B1ft	[5.4, 5.6] with no number of pounds implies B1B1
	Additional Guidance		
	73.5 with answer 5.25 or 5.3		B0B1ft
	16 with answer [1.1, 1.143]		B0B1ft
	76 pounds with answer 5.6		B1B0

Q	Answer	Mark	Comments
14(b)	Alternative method 1 Using a point from the graph		
	Reads a point from the graph and works out their y -value $\div$ their x -value	M1	eg $86 \div 39$ or $22 \div 10$ $\pm \frac{1}{2}$ square
	[2.2, 2.21]	A1	oe fraction
	Alternative method 2 Using values from (a)		
	their $77 \div 35$	M1	
	[2.2, 2.21]	A1ft	oe fraction eg $\frac{77}{35}$ ft their value from (a)
	Alternative method 3 Using gradient of the graph		
	Reads 2 points from the graph and works out the difference in their y -values $\div$ the difference in their x -values	M1	eg $(86 - 22) \div (39 - 10)$ $\pm \frac{1}{2}$ square
	[2.2, 2.21]	A1	oe fraction
	Additional Guidance		
	Allow an equation eg $y = 2.2x$		M1A1
	Alt 1 and Alt 3, reading from the graph in tolerance but answer out of range eg $2 \div 1 = 2$		M1A0
	Answer in range with no incorrect work seen eg answer 2.2		M1A1

Q	Answer	Mark	Comments
15(a)	Yes and two correct comparable values eg 800 000 and 750 000 or 0.8 million and 0.75 million or $(8 \times 10^5$ and) $7.5(0) \times 10^5$ or 0.8×10^6 and 0.75×10^6 or Yes, it is 50 000 oe bigger	B2	B1 800 000 or 0.8 million or 0.8×10^6 or 750 000 or $7.5(0) \times 10^5$ or 0.75 million or 0.75×10^6
	Additional Guidance		
	Yes can be implied eg 800 000 seen and 750 000 is less		B2

Q	Answer	Mark	Comments
15(b)	1.8×10^{-1}	B2	B1 18×10^{-2} or 0.18 oe or 0.09
	Additional Guidance		
	Correct answer in working with 0.18 on answer line		B1

Q	Answer	Mark	Comments
16	Alternative method 1		
	$\frac{x}{2} = 25 - 1$ or $\frac{x}{2} = 24$ or $x + 2 = 50$	M1	box A
	their 24×2 or 48	M1dep	box A
	3(their $48 - 30$) or 3×18 or 54 and their $48 + 5$ or 53	M1	oe substitution in boxes B and C ft their 48 which must be > 30
	54 and 53 and No	A1	
	Alternative method 2		
	$3x - 90 = x + 5$ or $3x - x = 90 + 5$ or $2x = 95$	M1	assuming boxes B and C are equal
	their $95 \div 2$ or 47.5	M1dep	oe
	their $47.5 \div 2 + 1$ or $23.75 + 1$ or 24.75	M1	oe substitution in box A ft their 47.5
	24.75 (and 25) and No	A1	
	Alternative method 3		
	$\frac{x}{2} = 25 - 1$ or $\frac{x}{2} = 24$	M1	box A
	$3x - 90 = x + 5$ or $3x - x = 90 + 5$ or $2x = 95$	M1	assuming boxes B and C are equal
	their 24×2 or 48 or their $95 \div 2$ or 47.5	M1dep	oe dep on either M1
	48 and 47.5 and No	A1	
	Additional Guidance		
	Choose the scheme that favours the student		
	No can be implied eg box B is heavier than box C		

Q	Answer	Mark	Comments
17	$\begin{pmatrix} 5 \\ 0 \end{pmatrix}$	B1	ignore fraction line
	$x = 6$	B1	
	180 and (6, 4)	B1	

Q	Answer	Mark	Comments
18(a)	Any two correct pairs of coordinates	M1	eg (0, -1), (1, -0.5), (2, 0), (3, 0.5), (4, 1), (5, 1.5), (6, 2) may be in a table implied by at least two correct points plotted $\pm \frac{1}{2}$ square
	At least two correct points plotted or at least two of their points plotted correctly	M1	correct line of any length implies M2 $\pm \frac{1}{2}$ square
	Correct line from (0, -1) to (6, 2)	A1	
	Additional Guidance		
	Ignore extra points that are incorrect		
	Ignore lines outside $0 \leq x \leq 6$		

Q	Answer	Mark	Comments
18(b)	Correct values for their graph	B2ft	$\pm \frac{1}{2}$ square B1ft 1 correct value ft their graph SC1 x and y values transposed
	Additional Guidance		
	Follow through any line or curve drawn in (a)		

	Exact solutions are $x = 2\frac{4}{7}$ and $y = \frac{2}{7}$	B2
--	--	----

Q	Answer	Mark	Comments
19	$\frac{4 \times x}{2}$ or $2x$ or 11×2.5 or 27.5	M1	oe
	$\frac{3}{5} \times 11 \times 2.5$ or $\frac{33}{2}$ or 16.5 or $\frac{4 \times x}{2} \div \frac{3}{5}$ or $\frac{10x}{3}$	M1	oe
	$\frac{4 \times x}{2} = \frac{3}{5} \times 11 \times 2.5$ or $2x = 16.5$	M1dep	oe equation dep on M1M1 $\frac{3}{5} \times 11 \times 2.5 \div 4 \times 2$ oe implies M3
	8.25	A1	

Q	Answer	Mark	Comments
20(a)	0.21×2 or 0.42	M1	oe may be in table
	$1 - 0.21 - 0.15$ – their 0.42	M1	oe their 0.42 must be < 0.64 implied by four values in table totalling 1
	0.22	A1	may be in table

Q	Answer	Mark	Comments
20(b)	0.21×600 or 126 or 0.15×600 or 90 or $0.21 + 0.15 (\times 600)$ or $0.36 (\times 600)$	M1	oe
	216	A1	
	Additional Guidance		
	Answer $\frac{216}{600}$		M1A0
	Answer 216 out of 600		M1A1

Q	Answer	Mark	Comments
21	$19 = 2^2 + 2k + k$ or $15 = 3k$ or $k = 5$	M1	oe
	$3^2 + 3 \times \text{their } 5 + \text{their } 5$ or $9 + 15 + 5$	M1dep	oe
	29	A1	