

INTERNATIONAL GCSE MATHEMATICS

9260/2C

Core Tier Paper 2C

Mark scheme

June 2024

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2 4 6 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.

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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	2 labelled in correct position on both scales	B2	B1 2 labelled in correct position on one scale accept any unambiguous indication
	Additional Guidance		

Q	Answer	Mark	Comments
2(a)	A	B1	accept rectangle

Q	Answer	Mark	Comments
2(b)	B	B1	accept square

Q	Answer	Mark	Comments
3(a)	12	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
3(b)	14	B2	B1 8 (Monday) or 22 (Friday) or 5.5 – 2 or 3.5

Q	Answer	Mark	Comments
3(c)	2 full circles and a semicircle in Thursday	B1	semicircle can be any orientation
	Additional Guidance		
	Complete circle drawn half size to represent a semicircle		B0

Q	Answer	Mark	Comments
4	10 – 6.09 or 3.91 or 1000 – 609 or 391	M1	
	their $3.91 \div 0.17$ or their $391 \div 17$ or digits 23	M1dep	
	23	A1	
	Additional Guidance		
	Up to M2 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Embedded 23 eg $609 + 23 \times 17$ without answer 23		M2A0

Q	Answer	Mark	Comments
5	All 3 correct	B3	B2 2 correct B1 1 correct
	Additional Guidance		
	$10 - 2 \times (3 - 1)$ $10 - 2 \times 3 - 1$ $(10 - 2) \times 3 - 1$ 3 6 16 23		B3
	2 lines from one calculation is choice		

Q	Answer	Mark	Comments
6(a)	(1, 2)	B1	
	Additional Guidance		

Q	Answer	Mark	Comments
6(b)	(-4, 2) marked with a cross or dot	B2	B1 any point on the grid marked with a cross or dot to give a trapezium ignore any lines drawn
	Additional Guidance		
	Mark intention		

Q	Answer	Mark	Comments
7	(is) less (than)	B1	allow <
	(is) equal (to)	B1	allow =
	Additional Guidance		
	Accept unambiguous alternative wording		
	Ignore symbols if words are given		

Q	Answer	Mark	Comments
8(a)	$p = 3r$	B1	oe equation eg $p = r \times 3$ or $r = \frac{p}{3}$
	Additional Guidance		
	Condone upper case for either or both letters eg $p = 3R$		B1

Q	Answer	Mark	Comments
8(b)	$3x + 6$ or $3(x + 2)$	B1	oe eg $(x + 2) \times 3$
	Additional Guidance		
	$x + 2 \times 3$		B0
	Ignore any attempt to 'solve' an equation if $3x + 6$ (or equivalent) seen		B1
	Do not accept an incorrect attempt to 'simplify' the correct expression eg $3(x + 2) = 6x$		B0

Q	Answer	Mark	Comments
9(a)	4	B1	

Q	Answer	Mark	Comments
9(b)	14:15 and 16:00 identified or 60 + 45 or 1(h) 45 or 1.75(h)	M1	oe eg $30 \times 3 + 15$
	105	A1	SC1 145
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Condone 1.45 for 1 hour 45		M1

Q	Answer	Mark	Comments
9(c)	9 + 6 + 13 + 3 + 25 or 9 + 6 + 13 or 3 + 25 or 28	M1	oe may be on graph
	56	A1	
	Additional Guidance		
	A calculation for 28 may be seen embedded eg $6 + 3 + 25$		M1

Q	Answer	Mark	Comments
10(a)	480×3	M1	oe eg $480 \div 20 \times 60$ or $480 + 480 + 480$
	1440	A1	

Q	Answer	Mark	Comments
10(b)	Alternative method 1: Items per minute		
	$480 \div 20$ or 24	M1	
	24 (and 23) and Machine A	A1	oe eg A makes 1 more item per minute (than B)
	Alternative method 2: Items per 20 minutes		
	23×20 or 460	M1	
	(480 and) 460 and Machine A	A1	oe eg A makes 20 more items per 20 minutes (than B)
	Alternative method 3: Items per hour		
	23×60 or 1380	M1	
	(their 1440 and) 1380 and Machine A	A1ft	ft correct decision for their 1440 from part (a) oe eg A makes 60 more items per hour (than B)
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Alternative methods with other comparable values are valid		
	If Machine A box is not selected accept any unambiguous indication		

Q	Answer	Mark	Comments
11(a)	BG WG RP BP WP RY BY WY with no errors or repeats	B2	any order B1 4 or more combinations accept words
	Additional Guidance		
	Colours may be in either order, eg BG is the same as GB		
	Ignore errors and repeats for B1		
	BG and GB is a repeat		
	Ignore one repeat of RG for B2		

Q	Answer	Mark	Comments
11(b)	$\frac{2}{9}$ or 0.22(2...) or 22(.2...)%	B1ft	oe fraction, decimal or percentage correct or ft their list of choices for part (a)
	Additional Guidance		
	Decimals or percentages must be correct and to at least 2sf		
	Ignore incorrect simplification or change of form once correct answer is seen		

Q	Answer	Mark	Comments
12	Correct method to work out the number of packs required or the total cost of the packs required before the reduction	M1	eg $100 \div 8$ or 12.5 or 13 eg $100 \div 8 \times 16$ or 12.5×16 or 200 or 13×16 or 208
	Correct method to work out 95% of the gross cost of any number of tiles or packs of tiles	M2	eg 16×0.95 or 15.2(0) M1 correct method to work out 5% of the gross cost of any number of tiles or packs of tiles 16×0.05 or 0.8(0) or 80p
	197.6(0)	A1	SC1 0.95 or $\frac{19}{20}$
	Additional Guidance		
	Up to M3 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		

Q	Answer	Mark	Comments	
13	$8 + 144$ or $2^3 + 12^2$	B2	oe eg $8 + 12^2$ or $152 - 8 = 144$ or $152 - 144 = 8$ B1 at least three cube numbers > 1 evaluated and at least three square numbers > 1 evaluated or a trial of a cube number > 1 added to a square number > 1 with their sum evaluated correctly	
	Additional Guidance			
	8, 27, 64 and 4, 9, 16 without correct answer		B1	
	If 64 is used it must be clear whether it is being used as a cube or a square number or both eg1 27, 64, 125 and 16, 25, 64 eg2 27, 64, 125 and 16, 25, 50		B1 B0	
	$27 + 100 = 127$		B1	

Q	Answer	Mark	Comments
14(a)	$\frac{5}{16}$	B2	oe fraction B1 5 seen or 0.3125 or 31.25%
	Additional Guidance		
	Ignore simplification or conversion attempt after correct answer seen		

Q	Answer	Mark	Comments							
14(b)	Suitable key	B1								
	Fully correct, ordered and aligned	B2	B1 correct but not ordered or 3 rows correct							
	Additional Guidance									
	Alignment should be considered for B2 for the leaves – relative row length should be correct									
	eg Key: 1 2 represents 12 cm <table><tr><td>1</td><td>1 2 2 4 6</td></tr><tr><td>2</td><td>1 1 2 3 3 7</td></tr><tr><td>3</td><td>3 4 9</td></tr><tr><td>4</td><td>1 2</td></tr></table>		1	1 2 2 4 6	2	1 1 2 3 3 7	3	3 4 9	4	1 2
1	1 2 2 4 6									
2	1 1 2 3 3 7									
3	3 4 9									
4	1 2									

Q	Answer	Mark	Comments
15	49 – 14 or 35 seen or ratio equivalent to 2 : 5	M1	
	2 : 5	A1	allow $1 : 2.5$ or $1 : \frac{5}{2}$ or $0.4 : 1$ or $\frac{2}{5} : 1$ SC1 5 : 2 oe unitary ratio or 2 : 7 oe unitary ratio

Q	Answer	Mark	Comments
16	$\frac{5}{8}$ written as $\frac{15}{24}$ or both fractions written with a common denominator $1\frac{1}{3}$ written as $\frac{4}{3}$ or $(1)\frac{8}{24}$	M1	eg $\frac{120}{192}$ and $\frac{136}{192}$
	$\frac{15}{24}$ and $\frac{32}{24}$ or $(1)\frac{8}{24}$	M1dep	$\frac{15}{24}$ may be seen in $\frac{15+17}{24}$ allow other common denominators
	$\frac{15}{24}$ and $\frac{17}{24}$ and $\frac{32}{24}$ and $\frac{4}{3}$ or $1\frac{8}{24}$	A1	allow other common denominators
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Accept working with both sides to show they come to a common value eg right side changed to $\frac{4}{3}$ and left side worked out to be $\frac{4}{3}$		M1M1A1
	For mixed numbers, accept eg $1 + \frac{8}{24}$ instead of $1\frac{8}{24}$		
	Accept eg $\frac{15+17}{24}$ for $\frac{15}{24} + \frac{17}{24}$		

Q	Answer	Mark	Comments
17(a)	$\frac{283-0.25}{0.65} (+1)$ or $\frac{282.75}{0.65} (+1)$ or 435 (+1)	M1	oe
	436	A1	
	Additional Guidance		
	Do not allow misreads		

Q	Answer	Mark	Comments
17(b)	$646 = \frac{t-0.25}{0.65} + 1$	M1	oe equation in t
	$t - 0.25 = 0.65(646 - 1)$ or $t - 0.25 = 419.25$ or $\frac{t}{0.65} = 646 - 1 + \frac{0.25}{0.65}$ or $(t =) 0.65(646 - 1) + 0.25$	M1dep	oe correct substitution and rearrangement up to $t - 0.25 =$ or $\frac{t}{0.65} =$ or $t =$
	419.5	A1	oe accept 419 or 420 with 419.5 or full method seen
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		

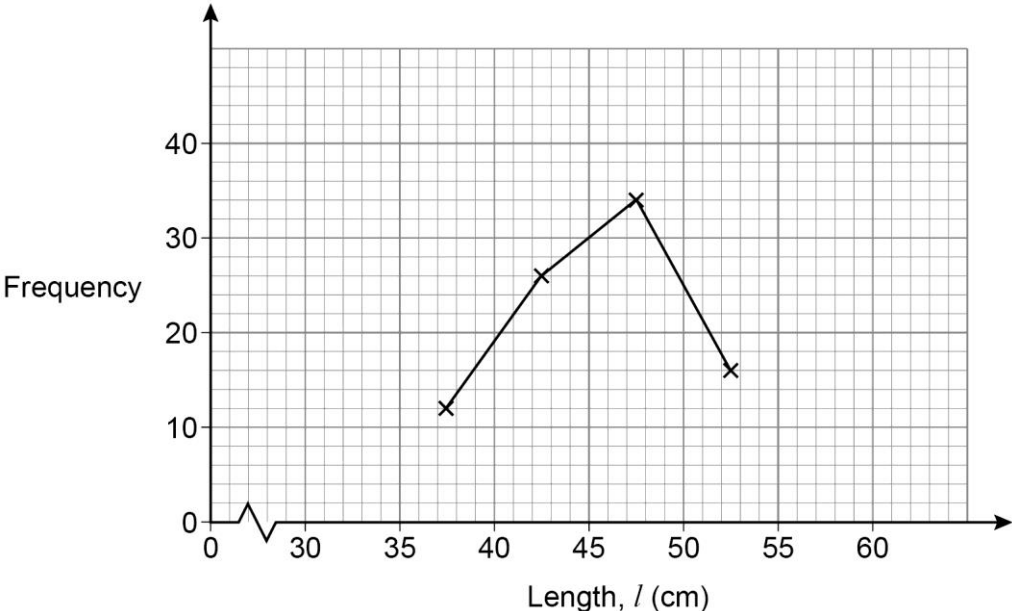
Q	Answer	Mark	Comments
18(a)	17	B1	

Q	Answer	Mark	Comments
18(b)	$\frac{15}{8}$	B1	

Q	Answer	Mark	Comments
19	$19 - 7n$ or $-7n + 19$	B2	oe eg $12 - 7(n - 1)$ B1 $-7n$
	Additional Guidance		
	B1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Condone $T_n = 19 - 7n$ or $n = 19 - 7n$		B2
	Allow other letters eg $19 - 7x$		B2
	Condone $n7$ as $7n$		
	Do not ignore further work following a B2 answer eg $19 - 7n = 12n$		B1
	Ignore further work following a B1 answer eg $-7n + 5 = -2n$		B1
	$19n - 7n$		B0

Q	Answer	Mark	Comments	
20(a)	$x(x - 1)$ or $(x - 1)x$ and $x^2 - x = 6$ or $6 = x^2 - x$ and $x^2 - x - 6 = 0$	B1	accept $x(x - 1) = 6$ or $(x - 1)x = 6$ or $6 = x(x - 1)$ or $6 = (x - 1)x$ and $x^2 - x - 6 = 0$	
	Additional Guidance			
	Allow $x \times (x - 1)$ for $x(x - 1)$			
	Ignore any attempt to solve $x^2 - x - 6 = 0$			

Q	Answer	Mark	Comments
20(b)	$(x - 3)(x + 2)(= 0)$ or $\frac{(- -)1 \pm \sqrt{(-1)^2 - 4(1)(-6)}}{2}$ or $x = \frac{1}{2} \pm \sqrt{\frac{25}{4}}$ or -2 and 3	M1	oe accept 1^2 for $(-1)^2$
	3	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		

Q	Answer	Mark	Comments
21	Three or four of (37.5, 12), (42.5, 26), (47.5, 34), (52.5, 16) correctly plotted or four points with correct frequencies consistently positioned at or between the class boundaries	M1	$\pm \frac{1}{2}$ small square
	(37.5, 12), (42.5, 26), (47.5, 34), (52.5, 16) correctly plotted and joined with straight lines to form a frequency polygon	A1	$\pm \frac{1}{2}$ small square
	Additional Guidance		
			M1A1
	Mark intention for straight lines		
	Points may be implied by the lines, but ignore any horizontal and/or vertical lines		
	Ignore (37.5,12) joined to (32.5, 0) or to (35, 0) and ignore (52.5, 16) joined to (55, 0) or to (57.5, 0) but any other extra line scores A0		
	Ignore extra points drawn		
	Ignore a histogram or bar chart drawn		
	Plots (35, 12), (40, 26), (45, 34), (50, 16) ie all points plotted at lower boundaries		M1A0
	Plots (35, 12), (40, 26), (45, 34), (55, 16) ie three points plotted at lower boundaries and one at upper boundary		M0

Q	Answer	Mark	Comments
22(a)	100	B1	may be on diagram

Q	Answer	Mark	Comments
22(b)	$\frac{20}{16}$ or 1.25 or $\frac{16}{20}$ or 0.8 or $\frac{16}{10}$ or 1.6 or $\frac{10}{16}$ or 0.625	M1	oe fraction or decimal
	12.5	A1	oe may be on diagram
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	$10 \times 20 \div 16$		M1
	$16y = 200$		M1

Q	Answer	Mark	Comments
23(a)	$\begin{pmatrix} -9 \\ 7 \end{pmatrix}$	B2	B1 $\begin{pmatrix} -9 \\ \dots \end{pmatrix}$ or $\begin{pmatrix} \dots \\ 7 \end{pmatrix}$ SC1 $\begin{pmatrix} 9 \\ -7 \end{pmatrix}$
	Additional Guidance		
	Condone + sign and/or fraction line eg $\begin{pmatrix} -9 \\ +7 \end{pmatrix}$		B2
	$\begin{pmatrix} -9x \\ 7y \end{pmatrix}$ or $\begin{pmatrix} x-9 \\ y+7 \end{pmatrix}$ or $\begin{pmatrix} 9 \text{ left} \\ 7 \text{ up} \end{pmatrix}$		B0

Q	Answer	Mark	Comments
23(b)	(×) 1.5	B1	oe fraction or mixed number
	(-8, 5)	B1	
	Additional Guidance		
	Accept 1.5 ×		1st B1

Q	Answer	Mark	Comments
24(a)	a^{10}	B2	B1 $a^9 \times a$ or $a^6 \times a^4$ or a^{6+3+1} or a^{9+1} or a^{6+4} or a^{7+3}
	Additional Guidance		
	Condone use of x in place of a		

Q	Answer	Mark	Comments
24(b)	x^{16}	B2	B1 $\left[x^6\right]^3 = x^{18}$ or $x^6 \times x^6 \times x^4$
	Additional Guidance		
	Condone use of a in place of x		

Q	Answer	Mark	Comments
25	8	B1	

Q	Answer	Mark	Comments
26	Alternative method 1		
	Any equation that would give the answer $x = 12$	M1	eg $5x = 2x + 36$ $5x = 60$ $2x + 36 = 60$ $12x + 36 = 180$ $9x + 72 = 180$ $7x + 36 = 120$
	$x = 12$	M1	
	Yes and M1M1 awarded and substitution into one or more expression that shows that all three angles must be equal	A1	
	Alternative method 2		
	Any equation that would give the answer $x = 12$	M1	eg $5x = 2x + 36$ $5x = 60$ $2x + 36 = 60$ $12x + 36 = 180$ $9x + 72 = 180$ $7x + 36 = 120$
	$x = 12$	M1	
	Yes and solves two different equations to show $x = 12$ for both	A1	

Alternative method 3 and Additional Guidance on the next page

26 cont	Alternative method 3		
	$5 \times 12 = 60$	M1	
	$2 \times 12 + 36 = 60$	M1	
	Yes and $5 \times 12 = 60$ and $2 \times 12 + 36 = 60$	A1	
	Additional Guidance		
	In alt 1, from $5x = 2x + 36$ or $12x + 36 = 180$ or $9x + 72 = 180$ or $7x + 36 = 120$, with $x = 12$, either of angles BAC or ACB given as 60 with Yes scores full marks		
	In alt 1, from $5x = 60$, with $x = 12$, angle ACB ($2x + 36$) given as 60 with Yes scores full marks		
	In alt 1, from $2x + 36 = 60$, with $x = 12$, angle BAC ($5x$) given as 60 with Yes scores full marks		
	Yes can be implied eg the triangle is equilateral		

Q	Answer	Mark	Comments
27	180 – 165 or 15 or $180(n - 2) = 165n$	M1	oe equation
	24	A1	
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	24 seen embedded eg $180(24 - 2)$ without answer 24		M1A0