GCSE MATHEMATICS 8300/2H

Higher Tier Paper 2 Calculator

Mark scheme

November 2025

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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.

No student should be disadvantaged on the basis of their gender identity and/or how they refer to the gender identity of others in their exam responses.

A consistent use of 'they/them' as a singular and pronouns beyond 'she/her' or 'he/him' will be credited in exam responses in line with existing mark scheme criteria.

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Glossary for Mark Schemes

GCSE examinations are marked in such a way as to award positive achievement wherever possible. Thus, for GCSE Mathematics papers, marks are awarded under various categories.

If a student uses a method which is not explicitly covered by the mark scheme the same principles of marking should be applied. Credit should be given to any valid methods. Examiners should seek advice from their senior examiner if in any doubt.

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 $\leqslant$ 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.

Examiners should consistently apply the following principles.

Diagrams

Diagrams that have working on them should be treated like normal responses. If a diagram has been written on but the correct response is within the answer space, the work within the answer space should be marked. Working on diagrams that contradicts work within the answer space is not to be considered as choice but as working, and is not, therefore, penalised.

Responses which appear to come from incorrect methods

Whenever there is doubt as to whether a student has used an incorrect method to obtain an answer, as a general principle, the benefit of doubt must be given to the student. In cases where there is no doubt that the answer has come from incorrect working then the student should be penalised.

Questions which ask students to show working

Instructions on marking will be given but usually marks are not awarded to students who show no working.

Questions which do not ask students to show working

As a general principle, a correct response is awarded full marks.

Misread or miscopy

Students often copy values from a question incorrectly. If the examiner thinks that the student has made a genuine misread, then only the accuracy marks (A or B marks), up to a maximum of 2 marks are penalised. The method marks can still be awarded.

Further work

Once the correct answer has been seen, further working may be ignored unless it goes on to contradict the correct answer.

Choice

When a choice of answers and/or methods is given, mark each attempt. If both methods are valid then M marks can be awarded but any incorrect answer or method would result in marks being lost.

Work not replaced

Erased or crossed out work that is still legible should be marked.

Work replaced

Erased or crossed out work that has been replaced is not awarded marks.

Premature approximation

Rounding off too early can lead to inaccuracy in the final answer. This should be penalised by 1 mark unless instructed otherwise.

Continental notation

Accept a comma used instead of a decimal point (for example, in measurements or currency), provided that it is clear to the examiner that the student intended it to be a decimal point.

Q	Answer	Mark	Comments
1(a)	$x^2 - 7x - 60$	B2	terms in any order B1 four terms in any order with three correct from x^2 $(+)5x$ $-12x$ -60 terms may be seen in a grid implied by $x^2 - 7x + k$ (k any constant) or $ax^2 - 7x - 60$ (a not 0 or 1)
	Additional Guidance		
	B2 response followed by further, incorrect work is B1 eg $x^2 - 7x - 60 = -7x - 60$	B1	
	B1 response followed by further, incorrect work is B1 eg $x^2 + 5x - 12x - 12 = 5x^3 - 12x - 12$	B1	
	Allow eg $+ -12$ for -12 as a correct term for B1, but needs full simplification for B2		
	Allow terms only seen as products for B1 but need full simplification for B2		

Q	Answer	Mark	Comments
1(b)	$9t^8$	B2	B1 $3^2t^{2\times4}$ or $9t^a$ ($a \geqslant 1$) or bt^8 ($b \geqslant 1$)
	Additional Guidance		
	B2 response followed by further, incorrect work is B1 eg $9t^8 = t^{17}$	B1	
	B1 response followed by further, incorrect work is B1 eg $3t^8 = 24t$	B1	
	Allow a product for B1 but need full simplification for B2		

Q	Answer	Mark	Comments
1(c)	$3w(w+4)$ or $3w(4+w)$	B2	B1 $w(3w+12)$ or $3(w^2+4w)$ allow multiplication signs for B2 or B1
	Additional Guidance		
	Condone missing final bracket for B2 or B1		
	$w(12+3w)$ etc		B1
	$(3w+0)(w+4)$ $(w+0)(3w+12)$		B2 B1
	Ignore expansion of a B2 or B1 response		
	B2 response followed by further, incorrect work is B1 eg $3w(w+4)=7w^2$		B1
	B1 response followed by further, incorrect work is B1 eg $3(w^2+4w)=15w^3$		B1
	Ignore any attempt to 'solve' eg1 $3w(w+4)$ in working lines with 0 and -4 on answer line eg2 $w(3w+12)$ in working lines with 0 and -4 on answer line		B2 B1
	Condone incorrect order for B1 but not for B2 eg1 $(w+4)3w$ eg2 $(w3+12)w$		B1 B1
	Condone inclusion of coefficient 1 for B1 but not for B2 eg1 $3w(1w+4)$ eg2 $3(1w^2+4w)$		B1 B1

Q	Answer	Mark	Comments
1(d)	$(x + 3)(x + 6)$	B2	oe factorisation eg $(3 + x)(x + 6)$ B1 $(x + a)(x + b)$ oe factorisation where $ab = 18$ or $a + b = 9$ allow a multiplication sign between the brackets for B2 or B1
	Additional Guidance		
	Condone missing final bracket eg1 $(x + 3)(x + 6$ eg2 $(x + 1)(x + 18$		B2 B1
	Ignore expansion of a B2 or B1 response		
	B2 response followed by further, incorrect work is B1 eg $(x + 3)(x + 6) = 18x^2$		B1
	B1 response followed by further, incorrect work is B1 eg $(x + 8)(x + 1) = 8x^2$		B1
	Ignore any attempt to 'solve' eg1 $(x + 3)(x + 6)$ in working lines with -3 and -6 on answer line eg2 $(x + 1)(x + 18)$ in working lines with -1 and -18 on answer line		B2 B1
	Condone inclusion of coefficient 1 for B1 but not for B2 eg1 $(1x + 3)(x + 6)$ eg2 $(1x + 1) \times (1x + 18)$		B1 B1

Q	Answer	Mark	Comments
2(a)	24 + 10 or 34 or –24 – 10 or –34 or 6 + 17 + 27 or 50 or –24 – 10 + 6 + 17 + 27 or 16 or 24 + 10 – 6 – 17 – 27 or –16 or –24 – 10 + 6 + 17 or – 11 or 24 + 10 – 6 – 17 or 11	M1	oe may be in thousands do not accept 16 or –16 if from incorrect work
	34 and 50 and (answer) 5 or –34 and 50 and (answer) 5 or 16 and (answer) 5 or –16 and (answer) 5 or – 11 and 27 and (answer) 5 or 11 and 27 and (answer) 5	A1	34, 50, –34, 16, –16, – 11, 11, 27 may be in thousands
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	Condone eg 50K for 50 000		
	Condone an embedded correct calculation eg the inclusion of a value for year 6		

Q	Answer	Mark	Comments
2(b)	[39 000, 60 000]	B1	
	Additional Guidance		
	[39, 60]		B0
	Condone eg 50K for 50 000		
	Answer line blank with point plotted at Year 7 in range [39 000, 60 000]		B0

Q	Answer	Mark	Comments
3	Converts 35 km and 2 cm to the same unit or 1 750 000	M1	eg 3 500 000 or 0.02 and 35 000
	1 : 1 750 000	A1	
	Additional Guidance		
	Allow values written in standard form eg allow 1.75×10^6 for 1 750 000		
	Allow values in millions eg allow 3.5 million for 3 500 000		
	2 : 3 500 000		M1
	1 : 3 500 000		M1
	$1 : \frac{3\,500\,000}{2}$		M1A0
	Ignore incorrect use of commas and/or spaces if digits are correct eg 1 : 17,500 00		M1A1
	Ignore units		
	Ignore rounding after correct value has been seen		
	$1 : 1\,750\,000n$		M1A0

Q	Answer	Mark	Comments
4(a)	$7n + 1$ or $1 + 7n$	B2	B1 correct unsimplified expression or $7n + k$ oe where k is any constant
	Additional Guidance		
	B2 response followed by further, incorrect work is B1 eg $7n + 1 = 8n$	B1	
	B1 response followed by further, incorrect work is B1 eg $7n - 1 = 6n$	B1	
	Ignore LHS eg1 $T_n = 7n + 1$ eg2 $n = 7n$	B2 B1	
	Condone use of N or other variables		
	$7n$ may be seen as $7 \times n$ or $n \times 7$ or $n7$ for B1 but needs full simplification for B2 eg1 $7 \times n + 1$ eg2 $n7 + 1$ eg3 $n7$	 B1 B1 B1	
	Condone $8 + (n - 1)7$	B1	

Q	Answer	Mark	Comments
4(b)	**Alternative method 1: sets up an inequality or an equation**		
	$2n - 3 > 100$ or $2n - 3 = 100$ or $2n - 3 = 101$	M1	oe inequality or equation eg $2n > 103$ implied by 51.5 oe
	52	A1	allow $n = 52$
	Alternative method 2: trial and improvement		
	Correctly evaluates a term for $40 \leqslant n \leqslant 60$	M1	eg $n = 40$ and 77 or $2 \times 60 - 3$ and 117 ignore incorrect trials
	52	A1	allow $n = 52$
	Additional Guidance		
	Embedded answer $2 \times 52 - 3$		M1A0
	Answer 101 ($2 \times 52 - 3$ or $n = 52$ seen)		M1A0
	Answer 101 (neither $2 \times 52 - 3$ nor $n = 52$ seen)		M0A0
	Answer 52		M1A1

Q	Answer	Mark	Comments
5	$x = -2$ and $y = -3$	B1	

Q	Answer	Mark	Comments
6	A and D	B1	
	Additional Guidance		
	Check diagram for letters or triangles circled		

Q	Answer	Mark	Comments
7	6, 8, 10 and 12 with no other values	B3	B2 6, 8, 10 and 12 with one other value or any three of 6, 8, 10 and 12 with no other value or 6, 7, 8, 9, 10, 11 and 12 B1 $5 < x \leqslant 12$ oe eg $6 \leqslant x$ **and** $x \leqslant 12$ or 6, 8, 10 and 12 with two other values or any three of 6, 8, 10 and 12 with one other value or any two of 6, 8, 10 and 12 with no other value or 6, 7, 8, 9, 10, and 11 or 5, 6, 7, 8, 9, 10, 11 and 12 SC2 6, 8, 10, 12 in the working and 4 on the answer line
	Additional Guidance		
	Ignore repeats for any mark		
	Values may be in any order		
	Mark the answer line. If the answer line scores B0 and SC2 not awarded look in the work for an inequality		
	5, 6, 7, 8, 9, 10, 11		B0

Q	Answer	Mark	Comments
8	**Alternative method 1: Finds the overall total first**		
	$225 \times \frac{1}{3}$ or 75 or $975 \times \frac{3}{5}$ or 585	M1	oe
	$225 \times \frac{1}{3} + 975 \times \frac{3}{5}$ or $75 + 585$ or 660	M1dep	oe
	$\frac{\text{their } 75 + \text{their } 585}{225 + 975}$ or $\frac{660}{1200}$ or $\frac{11}{20}$ or 0.55	M1	oe numerator must be from the sum of two numbers 1 < their 75 < 225 1 < their 585 < 975
	55	A1	SC3 45 SC2 0.45 SC1 540

The mark scheme for question 8 continues on the next page

Q	Answer	Mark	Comments
8cont	**Alternative method 2: Finds the percentage for each year first**		
	$225 \times \frac{1}{3}$ or 75 or $975 \times \frac{3}{5}$ or 585	M1	oe
	$\frac{225 \times \frac{1}{3}}{225 + 975}$ or 0.0625 or 6.25 or $\frac{975 \times \frac{3}{5}}{225 + 975}$ or 0.4875 or 48.75	M1dep	oe
	their 0.0625 + their 0.4875 or 0.55	M1	oe their 0.0625 must be $<$ 0.1875 and cannot be from use of 0.3 for $\frac{1}{3}$ their 0.4875 must be $<$ 0.8125
	55	A1	SC3 45 SC2 0.45 SC1 540

The Additional Guidance for Question 8 is on the next page

8cont	**Additional Guidance**	
	Up to M3 may be awarded for correct work, with no or incorrect answer, even if this is seen amongst multiple attempts	
	Allow 0.33 or better for $\frac{1}{3}$ and up to M3 can be scored if not recovered	
	Use of 0.3 for $\frac{1}{3}$ can be awarded up to a maximum of M2 in either Alt eg In Alt 2 $0.3 \times 225 = 67.5$ $0.6 \times 975 = 585$ M1 (for 0.6×975) $67.5 \div 1200 = 0.05625$ $585 \div 1200 = 0.4875$ M1dep (for $585 \div 1200$) $0.05625 + 0.4875$ M0 (because although it fits the inequalities, 0.05625 comes from use of 0.3)	
	The SCs are for calculating those that do not prefer Science and may be seen in the working	
	$\frac{100+560}{225+975}$ with no correct method for 100 and 560	M0M0 M1A0

Q	Answer	Mark	Comments
9	$\pi \times 15$ or [47, 47.13]	M1	oe eg [3.14, 3.142] × 15
	their [47, 47.13] ÷ 6 or 2.5π	M1dep	oe
	[7.8, 7.9]	A1	
	Additional Guidance		
	$\pi 15$		M1
	$\pi 2.5$		M2
	Ignore rounding to 8 after [7.8, 7.9] has been seen		
	Further incorrect work after [7.8, 7.9]		M2A0

Q	Answer	Mark	Comments
10(a)	Indicates there is one other possible number	B1	eg Kim could have thought of 8
	Additional Guidance		
	There are two numbers she could have thought of		B1
	There is more than one possibility		B0
	$8-10=-2$ $-2\times-2=4$ (condone $-2^2=4$)		B1
	$8-2=-2$ $-2\times-2=4$		B0
	She could have done $8-10$		B1
	She could have used -2 as squaring -2 also gives 4		B0
	Condone Lyn may have used 8		B1
	Kim might have made a mistake in her calculations		B0
	Ignore trials of numbers other than 8		

Q	Answer	Mark	Comments
10(b)	16 with no other numbers	B2	B1 4 or 6 or 8 or 9 or 11 or 12 or 14 SC1 37 with no other numbers
	Additional Guidance		
	B1 numbers must be answers – allow if part of a list if all are correct		B1

Q	Answer	Mark	Comments
11	**Alternative method 1: total area × length**		
	8 × 8 or 64	M1	oe may be on diagram
	[8 × (12 – 8)] ÷ 2 or 32 ÷ 2 or 16	M1	oe may be on diagram 80 implies M2
	(their 64 + their 16) × 15	M1dep	oe full method dep on M2
	1200	A1	
	Alternative method 2: sum of volumes of parts		
	8 × 8 × 15 or 960	M1	oe
	[8 × (12 – 8)] ÷ 2 × 15 or 32 ÷ 2 × 15 or 240	M1	oe
	8 × 8 × 15 + (8 × (12 – 8)) ÷ 2 × 15 or 960 + 240	M1dep	oe full method dep on M2
	1200	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		
	16 from an incorrect method, eg 8 × 8 = 16		M0
	8 × 8 × 15 × 12		M0
	8 × 8 × 4		M0
	8 × 15		M0
	80 × 15 + 16 × 15		M1M1M0

Q	Answer	Mark	Comments
12(a)	No and correct reason	B1	eg No and They should take chairs from each factory or No and One factory is not representative of the whole company or No and The sample is biased
	Additional Guidance		
	Correct reason alongside other non-contradictory work eg No and Sample is too small, they haven't taken chairs from all five	B1	
	No and All 5 factories might not make chairs of the same strength	B1	
	No and Assumes all factories work to same standard	B1	
	No and There are different workers at the different factories	B1	
	No and Not representative	B1	
	No and Biased	B1	
	No and Not enough variation	B0	
	No and Sample is too small	B0	

Q	Answer	Mark	Comments
12(b)	409 + 402 + 1023 + 550 + 576 or 2960	M1	all five numbers may be divided by 209 all five numbers may be divided by 14
	2960 ÷ 209 and [14.1, 14.2] or 2960 ÷ 209 and 14 or 2960 ÷ 14 and [211, 211.43] or 2960 and 209 × 14 and 2926	A1	oe any conclusion that the company does not achieve its target is A0 incorrect further work is A0
	Additional Guidance		
	An incorrect total below column 2 of the table implies addition		

Q	Answer	Mark	Comments
12(c)	**Alternative method 1: uses the cost for one chair**		
	84.9(0) × 0.7 or 59.43	M1	oe
	84.9(0) + their 59.43 or 144.33	M1dep	oe 84.9(0) × 1.7 oe scores M2
	their 144.33 ÷ 0.95 or 151.9(26…)	M1dep	oe
	151.93	A1	accept 152 with M3 awarded
	Alternative method 2: uses the cost for a number of chairs		
	Correct method to work out the profit required for a number of chairs	M1	eg for 20 chairs 20 × 84.9(0) × 0.7 or 1188.6(0)
	Correct method to work out the total income required for their number of chairs	M1dep	eg for 20 chairs 20 × 84.9(0) + their 1188.6(0) or 20 × 84.9(0) × 1.7 or 2886.6(0)
	Correct method to work out the required minimum unit price or 151.9(26…)	M1dep	eg for 20 chairs their 2886.6(0) ÷ 0.95 ÷ 20 or their 2886.6(0) ÷ 19
	151.93	A1	accept 152 with M3 awarded
	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		
	Example of Alt 2 using 2960 chairs 2960 × 84.9(0) × 0.7 or 175 912.8 2960 × 84.9(0) + their 175 912.8 or 427 216.8 their 427 216.8 ÷ 0.95 ÷ 2960 151.93		M1 M1dep M1dep A1

Q	Answer	Mark	Comments
12(d)	It is less than the answer to part (c)	B1	

Q	Answer	Mark	Comments
13	(1, 4) and (2, 2) and (2, 4) plotted	B1	implied by correct answer
	Triangle drawn with coordinates (–3, 1) and (–2, –1) and (–2, 1)	B1ft	ft their points translated by $\begin{pmatrix} -4 \\ -3 \end{pmatrix}$
	Additional Guidance		
	For B1ft their points cannot be vertices of the given triangle		

Q	Answer	Mark	Comments
14	(Lower quartile =) 19 or (Highest value =) 67	M1	may be seen in working or implied by the box plot
	42 ÷ (9 + 5) × 9 or 27 or 42 ÷ (9 + 5) × 5 or 15 or $\frac{m - \text{their } 19}{61 - m} = \frac{9}{5}$	M1	implied by median identified as 46 in working or in box plot do not allow if 27 is from 54 ÷ 2 oe equation
	Rectangular box plot from 19 to 61 with whiskers to 13 and 67 and median line at 46	A1	$\pm \frac{1}{2}$ small square tolerance
	Additional Guidance		
	Mark intention eg any height and allow horizontal line through centre of box		
	Allow ends of whiskers to be dots, crosses or vertical lines of any length		

Q	Answer	Mark	Comments
15	Correct equation in sin x	M1	eg $\frac{\sin x}{18} = \frac{\sin 41}{26}$ for sin 41, allow [0.656, 0.6561] for 18 sin 41, allow [11.8, 11.81] for $\frac{\sin 41}{26}$, allow [0.025, 0.0253] for $\frac{18 \sin 41}{26}$, allow [0.45, 0.4554]
	$\sin x = \frac{18 \sin 41}{26}$ $(x =) \sin^{-1} \frac{18 \sin 41}{26}$ or $(x =) \sin^{-1}$ [0.45, 0.4554]	M1dep	oe equation with sin x the subject oe inverse sin
	[26.7, 27.1] with M2 awarded	A1	
	Additional Guidance		
	Ignore incorrect notation only if recovered eg $x = \frac{18 \sin 41}{26}$ with answer 27		M1M1A1

Q	Answer	Mark	Comments
16	**Alternative method 1: small circle + large sector – small sector**		
	$\frac{28}{360} \times \pi \times (12+5)^2$ or $\frac{2023}{90}\pi$ or [70.58, 70.63] or $\frac{28}{360} \times \pi \times 5^2$ or $\frac{35}{18}\pi$ or [6.1, 6.11]	M1	oe
	$\frac{28}{360} \times \pi \times (12+5)^2$ or $\frac{2023}{90}\pi$ or [70.58, 70.63] **and** $\frac{28}{360} \times \pi \times 5^2$ or $\frac{35}{18}\pi$ or [6.1, 6.11]	M1dep	oe
	[142.9, 143.1] or $\frac{683}{15}\pi$	A1	oe value

The mark scheme for question 16 continues on the next page

16cont	**Alternative method 2: large sector + major sector of circle**		
	$\frac{28}{360} \times \pi \times (12+5)^2$ or $\frac{2023}{90}\pi$ or [70.58, 70.63] or $\frac{360-28}{360} \times \pi \times 5^2$ or $\frac{415}{18}\pi$ or [72.39, 72.45]	M1	oe
	$\frac{28}{360} \times \pi \times (12+5)^2$ or $\frac{2023}{90}\pi$ or [70.58, 70.63] **and** $\frac{360-28}{360} \times \pi \times 5^2$ or $\frac{415}{18}\pi$ or [72.39, 72.45]	M1dep	oe
	[142.9, 143.1] or $\frac{683}{15}\pi$	A1	oe value
	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		

Q	Answer	Mark	Comments
17(a)	$4\left(\frac{6-x}{2}\right)-5$	M1	oe
	$7-2x$	A1	accept $7+-2x$ or $-2x+7$
	Additional Guidance		
	Do not accept incorrect simplification after correct answer seen eg $7-2x=5x$		M1A0

Q	Answer	Mark	Comments
17(b)	$6-2x$ or $2(3-x)$	B2	oe B1 $2y=6-x$ or $2g=6-x$ or $2x=6-y$ or $2x=6-g^{-1}$ SC1 $6-2y$ oe or $6-2g$ oe
	Additional Guidance		
	Do not allow incorrect simplification after correct answer seen eg $6-2x=4x$		B1
	Condone f for g		
	Condone f^{-1} for g^{-1}		

Q	Answer	Mark	Comments
17(c)	$(x+3)^2-3^2\ (-14)$ or $(x+3)^2-9\ (-14)$	M1	
	$(x+3)^2-23$	A1	
	Additional Guidance		
	$(x+3)^2$ may be written as $(x+3)(x+3)$ for M1 but not A1		

Q	Answer	Mark	Comments
17(d)	(–3, –23)	B2ft	B1ft $(-3, \ldots)$ or $(\ldots, -23)$
	Additional Guidance		
	For B2 or B1 accept correct answers or ft their $(x+3)^2-23$		

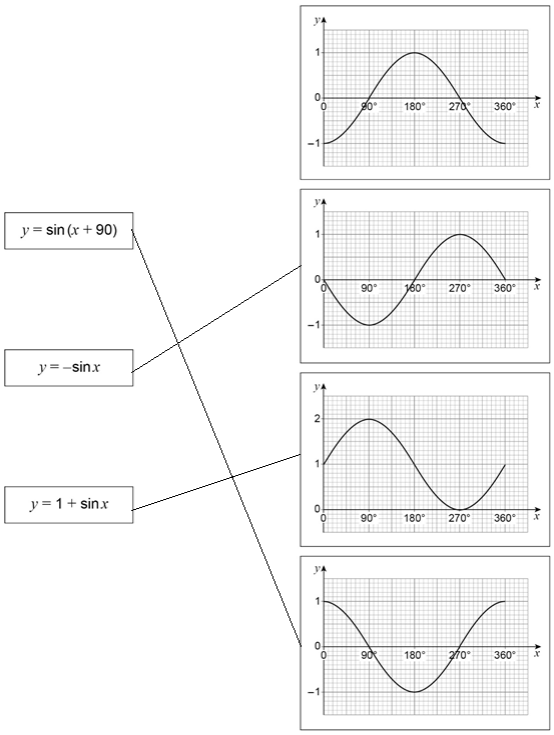
Q	Answer	Mark	Comments
18	23 or $\sqrt{529}$	B1	may be seen in the sequence if answer line is blank

Q	Answer	Mark	Comments
19	750 or 850 or 1.15 or 1.25	B1	accept $1.24\dot{9}$ or $849.\dot{9}$ implied by 739(.1…)
	$\frac{\text{their } 850}{\text{their } 1.15}$ or $\frac{17\,000}{23}$	M1	oe their 850 must be (800, 900] their 1.15 must be [1.1, 1.2)
	739(.1…)	A1	condone 740 from $\frac{850}{1.15}$

Q	Answer	Mark	Comments
20	$113^2 + 53^2$ or $12\,769 + 2809$ or 15 578	M1	oe
	$\sqrt{113^2 + 53^2}$ or [124.8, 124.812] or 125	M1dep	*AC*
	$\tan x = \frac{80}{\sqrt{113^2 + 53^2}}$ or $\tan x =$ [0.64, 0.64103]	M1dep	oe eg $\sin x = \frac{80}{\sqrt{113^2 + 53^2 + 80^2}}$ or $\sin x =$ [0.539, 0.54] or $\cos x = \frac{\sqrt{113^2 + 53^2}}{\sqrt{113^2 + 53^2 + 80^2}}$ or $\cos x =$ [0.84, 0.8423] any letter
	[32.6, 32.7]	A1	accept 33 with M3 awarded
	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		

Q	Answer	Mark	Comments
21	A pair of equal radii arcs drawn from *P* crossing the line	M1	may be drawn as one arc crossing the line in two places
	A second pair of arcs with equal radii drawn from the intersection of the first pair of arcs and the line, intersecting above or below the line	M1dep	cannot pass through *P*
	Perpendicular line drawn through point of intersection of second pair of arcs to *P* at least as far as the given line	A1	2 mm tolerance
	Additional Guidance		
	M1 may be awarded for correct work with no answer or incorrect answer, even if this is seen amongst multiple attempts		
	No arcs seen		M0M0A0

Q	Answer	Mark	Comments
22	Tangent to curve drawn at $x = 15$	M1	
	Tangent to curve drawn at $x = 15$ and [0.6, 0.9]	A1	oe value
	Litres/second or l/s or ls^{-1}	B1	oe
	Additional Guidance		
	Mark intention for drawing of tangent		
	No tangent drawn		M0
	0.8 litres/s with no tangent drawn		M0A0B1

Q	Answer	Mark	Comments
23	All 3 correct matches	B3	B1 each correct match
	Additional Guidance		
			B3
	Two lines from the same left-hand box is choice for that box		