Level 3 Certificate
MATHEMATICAL STUDIES
1350/1

Paper 1

Mark scheme

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236A1350/1/MS

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 aqa.org.uk

Glossary for Mark Schemes

Mathematical Studies examinations are marked in such a way as to award positive achievement wherever possible. Thus, for Mathematical Studies 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 ≤ 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)	Quota (sampling)	B1	

Q	Answer	Mark	Comments
1(b)	**Advantage**		
	Suitable comment eg All year groups represented Easy to do/work out	B1	ignore additional comments about randomness ignore irrelevant extra statements that are not disadvantages
	Disadvantage		
	Suitable comment eg May not represent the population fairly or There are more year 8's than year 9's or Year group sizes are different	B1	ignore irrelevant extra statements that are not advantages
	Additional Guidance		
	Condone class for year group		
	Comments for Advantages		
	Any comment which implies that each group is represented		B1
	They pick (15 students) from each group		B1
	All year groups have a (equal) say		B1
	Easy sampling method		B1
	It reduces bias/ it removes **some** bias		B1
	It removes bias		B0
	Time efficient		B0
	Cheap/cost effective		B0

Additional Guidance continues on the next page

1(b) cont'd	**Comments for Disadvantages**	
	Not random	B1
	Not all students have an equal chance of being chosen	B1
	Less representative of some year groups/ not proportional	B1
	Class sizes are different therefore not an equal chance	B1
	Risk of bias	B1
	It's not a stratified sample	B0
	Any reference to another characteristic eg gender	B0

Q	Answer	Mark	Comments
1(c)	Stratified (sampling)	B1	
	Additional Guidance		
	Ignore incorrect spelling of stratified		
	Proportionate/proportional sampling		B0

Q	Answer	Mark	Comments
1(d)	$\frac{216}{900} \times 75$ or 18 or $\frac{144}{900} \times 75$ or 12 or $\frac{216-144}{900} \times 75$	M1	oe fully correct method to find 18 or 12 or 6 eg 216 ÷ 12 or 0.083(33…) × 216
	6	A1	
	Additional Guidance		
	If working out the difference in percentage for the year groups they must show the full method which would lead to the answer $\frac{216-144}{900} \times 100$ or 8 and 0.08 × 75	M1	
	900 ÷ 75 = 12	M1	

Q	Answer	Mark	Comments
2(a)	**Alternative method 1**		
	1.015 seen or used	M1	oe implied by 2030
	$2000 \times (1.015)^3$ or 2091.(3..)	M1	oe eg year on year 2000 × 1.015 or 2030 and their 2030 × 1.015 or 2060.45 and their 2060.45 × 1.015 or 2091.(3..) must stop after 3 years
	their 2091.(3..) × 1.68 or [3512, 3513.5] or 3500 ÷ 1.68 or 2083.(…)	M1	
	[3512, 3513.5] and Yes or [12, 13.5] left/over or 2083.(…) and 2091.(3.) and Yes	A1	SC2 3511.(20) and Yes
	Alternative method 2		
	2000 × 1.68 or 3360	M1	
	1.015 seen or used	M1	
	their $3360 \times (1.015)^3$ or 3513.(…)	M1dep	dep on 1st M1
	3513.(…) and Yes or 13.(…) left/over	A1	SC2 3511.(20) and Yes

Additional Guidance is on the next page

	Additional Guidance	
2(a) cont'd	Yes may be implied eg she gets more than 3500	
	Use of incorrect years can gain maximum 2 marks eg 1 $2000 \times 1.015 = 2030$ $2030 \times 1.68 = 3410.4(0)$ No eg 2 $2000 \times 1.015 = 2030$ $2030 \times 1.015 = 2060.45$ $2060.45 \times 1.015 = 2091.36$ $2091.36 \times 1.015 = 2122.73$ (extra year included) $2122.73 \times 1.68 = 3717.39$ Yes	 M1M0 M1A0 M1 M0 M1A0
	Use of simple interest can gain a maximum 2 marks eg 2000×0.015 or 30 $2000 + 30 + 30 + 30$ or 2090 (implies 2030) $2090 \times 1.68 = 3511.2$ Yes	 M1M0 M1A0

Q	Answer	Mark	Comments
2(b)	190 ÷ 1.75 × 1.025	M2	oe M1 190 ÷ 1.75 or 108.57.. or 190 × 1.025 or 194.75
	111.28 or 111.29	A1	ignore rounding to 111 if 111.28 or 111.29 seen condone (£)111.29p SC2 111.(..)
	Additional Guidance		
	Use of 1 ÷ 1.75 prematurely rounded or truncated can gain maximum 2 marks eg 1 ÷ 1.75 = 0.57 0.57 × 190 = 108.3 108.3 × 1.025 = 111		M2A0
	One correct part of the method gains 1 mark eg 190 × 1.75 × 1.025		M1M0

Q	Answer	Mark	Comments
3(a)	quantitative and secondary	B1	

Q	Answer	Mark	Comments
3(b)	Lower quartile 52.91	B1	
	Median 53.86	B1	
	Upper quartile 55(.00)	B1	

Q	Answer	Mark	Comments
3(c)	Both fully completed box and whisker plots drawn accurately with at least one labelled	B3ft	values plotted within the correct small square eg 50.12 must be plotted anywhere from 50.1 to 50.2 inclusive ft their values for backstroke B2 one fully completed box and whisker plot drawn accurately and labelled or both box and whisker plots correct but no labels B1 one box and whisker plot fully correct with no label or both boxes (median and quartiles box) correctly drawn (no label needed) or both box and whisker plots fully drawn and labelled with maximum one plotting error in each
	Additional Guidance		
	Values for breaststroke are 49.45, 50.12, 51.76, 52.32 and 53.44 Whiskers for backstroke are 51.85 and 55.38		
	Ignore whiskers extended into box Whiskers do not need end lines Any height of box is allowed		
	If boxes overlap mark to scheme if clear which is which		

Q	Answer	Mark	Comments
3(d)	**Averages** Suitable comment eg Median is greater for the backstroke showing that on average it is a slower stroke or (on average) the backstroke is slower/worse or (on average) the breaststroke is faster/better or on average the backstroke swimmers took longer	B1ft	oe comment must be in context ft their median value in the table for the backstroke or from the two diagrams must not refer to values other than median
	Spreads Suitable comment that references IQR/width of box or range/spread and consistency/variation eg The IQR (2.2) /width of box for the breaststroke is larger than the IQR for the backstroke (2.09) showing less consistency/more variation or The range for the backstroke (3.53) is smaller than the range for the breaststroke (3.99) showing more consistency/less variation or the spread for backstroke is lower showing that backstroke times were more consistent	B1ft	oe comment must be in context ft their IQR/width of the two boxes or their IQ and UQ from the table for backstroke values do not have to be given but if quoted must be correct must not refer to median

Additional Guidance is on the next page

	Additional Guidance	
3(d) cont'd	Backstroke takes longer	B1
	Statements about median and IQR with no context	B0
	The median is higher for backstroke	B0
	The interquartile range is higher for breaststroke	B0
	The backstroke average is longer	B0
	If the diagrams and values give contradictory comparisons mark for the benefit of the candidate	

Q	Answer	Mark	Comments
4	Makes an assumption about the number of hours spent doing homework per day or week	B1	0.5–4 hours per day 2.5–28 hours per week
	Makes an assumption about the number of days/weeks in Year 10	B1	180–323 days (includes some holidays) 30–46 weeks (includes some holidays)
	their hours per day × their days per year or their hours per week × their weeks per year	M1	must be consistent time frames
	Accurate answer for their values	A1ft	ft their assumptions with at least one B1 scored may be rounded do not accept decimal answers
	Additional Guidance		
	Example 1 I assume that homework is done for 5 hours each day There are 365 days in a year 5 × 365 = 1825 (B0B0 so the accuracy mark is not awarded) Example 2 10 hours a week for homework 52 weeks in the year 10 × 52 = 520		 B0 B0 M1A0 B1 B0 M1A1ft
	Condone extra hours added at the end eg for holiday weeks if their hours/days/ weeks would still be in tolerance		

Q	Answer	Mark	Comments	
5	**Alternative method 1**			
	45 000 – 19 895 or 25 105	M1		
	their 25 105 × 0.09 or 2259.45	M1dep	annual SLC repayment implied by 445.55	
	(2705 – their 2259.45) ÷ 12 or 445.55 ÷ 12 or [37.12, 37.13]	M1	their 2259.45 < 2705	
	37.13	A1	SC2 92.63 or 92.64	
	Alternative method 2			
	45 000 – 19 895 or 25 105	M1		
	their 25 105 ÷ 12 × 0.09 or [188.28,188.29]	M1dep	monthly SLC regular repayment	
	(2705 ÷ 12) – their [188.28,188.29] or [225.41, 225.42] – their [188.28,188.29] or [37.12, 37.14]	M1	their [188.28,188.29] < [225.41, 225.42]	
	37.13	A1	SC2 92.63 or 92.64	
	Additional Guidance			
	SC2 is for use of the later threshold of £27 295			
	Ignore calculations for income tax and/or National Insurance if they do not affect the final answer			
	Premature rounding or truncation loses the A1			
	2259.45 scores M2			

Q	Answer	Mark	Comments
6(a)	**Alternative method 1**		
	Makes an assumption about increase per year eg states 2% increase per year	B1	allow 1% to 4% or 0.1 million to 0.3 million cannot be implied just by a value stated for any future year
	Calculates an estimate of number of trees needed in [10, 11] years time using their increase eg 7.66×1.03^{10} or 10.29… (million) eg $7.66 + 0.2 \times 10$ or 9.66 (million)	M1	number of trees needed in [10, 11] years from 2023 oe eg 7.05×1.025^{13} values may be rounded implies B1M1
	Makes an assumption about the percentage of Nordmann firs grown	B1	must be 70% to 85% may be stated at any point
	Calculates proportion of trees needed that should be Nordmann eg their 9.66 million × 0.8 or 7.728 (million)	M1	may be calculated after working out the area for all trees
	Makes an assumption about area needed for each tree	B1	allow 32 to 40 sq feet per tree implied by dividing 43 560 by 8 and by [4, 5] implied by area in tolerance for a set number of trees eg 25 trees = 1000 sq feet
	43 560 ÷ their [32, 40] or [1089,1361] or their number of trees × their area per tree eg 7.7 million × 40 or 308 million	M1	calculates number of trees per acre their [32, 40] must be an area
	their number of trees needed ÷ their trees per acre eg 7 728 000 ÷ 1100 or their total area needed ÷ 43 560 eg 308 million ÷ 43 560	M1	
	correct total for their assumptions eg 7025	A1ft	ft their assumptions with all method marks scored answer should be rounded at least to the nearest acre

Q	Answer	Mark	Comments
6(a) cont'd	**Alternative method 2**		
	Makes an assumption about increase per year eg states 2% increase per year	B1	allow 1% to 4% or 0.1 million to 0.3 million cannot be implied just by a value stated for any future year
	Calculates an estimate of number of trees needed in [10, 11] years time using their increase eg 7.66×1.03^{10} or 10.29… (million) eg $7.66 + 0.2 \times 10$ or 9.66 (million)	M1	number of trees needed in [10, 11] years from 2023 oe eg 7.05×1.025^{13} values may be rounded implies B1M1
	Makes an assumption about the percentage of Nordmann firs grown	B1	must be 70% to 85% may be stated at any point
	Calculates proportion of trees needed that should be Nordmann eg their 9.66 million × 0.8 or 7.728 (million)	M1	may be calculated after working out the area for all trees
	Makes an assumption about number of rows and columns per acre eg uses approx. 200 ft by 200 ft square gives about 25 rows and 50 columns eg 10 trees in a row is 50 feet wide so approx. 870 feet long so approx. 110 rows	B1	using $\sqrt{43\,560} \div 8$ with $\sqrt{43\,560} \div [4, 5]$ $\sqrt{43\,560}$ may be approximated to 210 or 200 allow decimal numbers of rows and/or columns width × length must approximate to 43 560 (eg $50 \times 870 = 43\,500$)
	eg their 25 × their 50 or 1250 or eg their 10 × 110 or 1100	M1	calculates number of trees per acre
	their number of trees needed ÷ their trees per acre eg 7 728 000 ÷ 1250 or 6182.4	M1	
	correct total for their assumptions eg 6200	A1ft	ft their assumptions with all method marks scored answer should be rounded at least to the nearest acre

Mark scheme and Additional Guidance continue on the next pages

Q	Answer	Mark	Comments
6(a) cont'd	**Alternative method 3**		
	Makes an assumption about increase per year eg states 2% increase (per year)	B1	allow 1% to 4% or 0.1 million to 0.3 million cannot be implied just by a value stated for any future year.
	Calculates an estimate of number of trees needed in [10, 11] years time using their increase eg 7.66×1.03^{10} or 10.29… (million) eg $7.66 + 0.2 \times 10$ or 9.66 (million)	M1	number of trees needed in [10, 11] years from 2023 oe eg 7.05×1.025^{13} values may be rounded implies B1M1
	Makes an assumption about the percentage of Nordmann firs grown	B1	must be 70% to 85% may be stated at any point
	Calculates proportion of trees needed that should be Nordmann eg their 9.66 million × 0.8 or 7.728 (million)	M1	may be calculated after working out the area for all trees
	Makes an assumption about number of rows and columns needed for their total number of trees eg 7.5 million trees needed so 75 000 rows of 100 trees	B1	their trees per row × number of columns must equal their total number of trees
	Works out total area for their rows × columns eg (100 × 4) × (75 000 × 8) or 400 × 600 000 or 240 000 000	M1	Row or column can be multiplied by [4, 5] with the other multiplied by 8
	their total area needed ÷ 43 560	M1	
	correct total for their assumptions eg 5510	A1ft	ft their assumptions with all method marks scored answer should be rounded at least to the nearest acre

Additional Guidance is on the next page

	Additional Guidance	
6(a) cont'd	For the first B mark an increase within tolerance must be clearly seen. It cannot be implied by a value stated for some other year eg 7.66 million + 0.24 million = 7.9 million This shows the increase they are using. But just seeing a value of 7.9 million does not imply this increase as this value may have come from proportion of trees or some other calculation	B1
	Multiplying by a percentage from 70 to 85 at any point implies the 2nd B1	
	Values may be rounded eg 7.728 to 7.7 million. Their final answer must be accurate for their assumptions taking into account any rounding shown	
	For number of trees in a row method allow gaps of 4 ft to 5ft wide between trees and allow adjustment for start and end eg using 4 ft apart, 2 ft before first tree and after last tree gives $9 \times 4 = 36$ feet needed for 10 trees	

Q	Answer	Mark	Comments
6(b)	Suitable comment eg Increase in sales may be lower so the number of acres/land needed would be lower or proportion of sales that are Nordmann may be higher so my number of acres may be too low	B1	must state how the answer is affected
	Additional Guidance		
	Just stating that an assumed value may be different is insufficient eg the number of trees sold may increase by a greater amount than I assumed	B0	

Q	Answer	Mark	Comments
7(a)	At least one correct frequency density 4, 8.5, 2, 0.75	M1	oe may be next to table implied by a correct bar
	Fully correct histogram 10 - 12 = 4 12 - 14 = 8.5 14 - 20 = 2 20 - 24 = 0.75	A2	±½ square A1 three bars correct
	Additional Guidance		
	Ignore line at 15 or other values/shading on bars. These may be their method for **part (b)**		

Q	Answer	Mark	Comments
7(b)	**Team A** $8 + 17 + \frac{1}{6} \times 12$ or $8 + 17 + 2$ or $40 - \frac{5}{6} \times 12 + 3$ or $40 - 13$ or 27	M1	oe eg $2 \times 4 + 2 \times 8.5 + 1 \times 2$
	Team B 2×2 or 2×9 or 1×3 or 3×3 or 4×1.5 or 1 person = 12.5 small squares or 1 small square = 0.08 people or $1\,cm^2 = 2$	M1	oe implied by 4 or 18 or 3 or 9 or 6 on correct bar/part of bar or correct scale for 1 person or 1 small square or any suitable scaling

Mark scheme continues on the next page

7(b) cont'd	$2 \times 2 + 2 \times 9 + 1 \times 3$ or $4 + 18 + 3$ or $(50 + 225 + 37.5) \div 12.5$ or $(50 + 225 + 37.5) \times 0.08$ or $40 – (3 \times 3 + 4 \times 1.5)$ or $40 – 15$ or 25	M1dep	oe eg suitable scaling that leads to 25 dep on previous M1
	27 and 25 and Team A or 67.5% and 62.5% and Team A	A2	A1 25 and 27 or A1ft correct decision for their values with one value correct SC5 13 and 15 and Team A SC3 13 and 15 (and Team B)
	Additional Guidance		
	There is no follow through from an incorrect graph in **part (a)**. They have the original data in the table to use.		
	Ignore attempt to convert to percentages if 27 and 25 seen		

Q	Answer	Mark	Comments
8	**Alternative method 1**		
	58 000 – 12 570 – 37 700 or 7730	M1	may be implied
	their 7730 × 0.4 or 3092 **and** 37 700 × 0.2 or 7540	M1dep	oe higher rate of tax and standard rate tax 10 632 total tax implies M2
	(58 000 – 50 270) × 0.0325 or 7730 × 0.0325 or [251.22, 251.23]	M1	oe higher rate NI implies 1st M1
	(50 270 – 12 570) × 0.1325 or 37 700 × 0.1325 or 4995.25	M1	oe basic rate NI 5246.47 or 5246.48 total NI implies 1st, 3rd, and 4th M1
	their 3092 + their 7540 + their 4995.25 + their 251.23 or 15 878.(..)	M1	totals all deductions must include standard and higher rate for both tax and NI 15 878.(..) implies M5
	58 000 – their 15 878.(47)	M1	their 15 878.(47) must include at least one amount of tax and at least one amount of NI
	42 121.(..)	A1	Julian's household net pay per year implied by correct final answer
	(their 42 121.(..) ÷ 12) × 0.3 or 1053.(..) or their 42 121.(..) × 0.3 **and** 12 × 1000 or 1000 ÷ (their 42 121.(..) ÷ 12) or 0.28..	M1	their 42 121.(..) cannot be 58 000
	1053.(..) and Yes or 12 636.(..) and 12 000 and Yes or 28.(…)% and Yes	A1ft	oe ft their 42 121.(..)

Mark scheme and Additional Guidance continue on the following pages

8 cont'd	**Alternative method 2 – calculating NI monthly but tax annually**		
	58 000 – 12 570 – 37 700 or 7730	M1	may be implied
	their 7730 × 0.4 or 3092 **and** 37 700 × 0.2 or 7540	M1dep	oe higher rate of tax and standard rate tax 10 632 total tax implies M2
	(58 000 ÷ 12 – 4189) × 0.0325 or their 644.33 × 0.0325 or 20.94	M1	oe higher rate of NI
	(4189 – 1048) × 0.1325 or 416.18	M1	oe 437.12 total NI implies 1st, 3rd, and 4th M1
	(their 3092 ÷ 12) + (their 7540 ÷ 12) + their 20.94 + their 416.18 or 1323.12 or their 3092 + their 7540 + (their 20.94 × 12) + (their 416.18 × 12) or 15 877.(44)	M1	oe totals all deductions must include standard and higher rate for both tax and NI 15 877.(44) (annual) implies M5
	(58 000 ÷ 12 – their 1323.12) × 12 or 58 000 – their 15 877.(44)	M1	their 15 877.(44) must include at least one amount of tax and at least one amount of NI
	42 122.(..) or 42 123	A1	Julian's household net pay per year implied by correct final answer
	(their 42 122.(..) ÷ 12) × 0.3 or 1053.(..) or their 42 122.(..) × 0.3 **and** 12 × 1000 or 1000 ÷ (their 42 122.(..) ÷ 12) or 0.28	M1	their 42 121.(..) cannot be 58 000
	1053.(..) and Yes or 12 636.(…) and 12 000 and Yes or 28.(…)% and Yes	A1ft	oe ft their 42 122.(..) or 42 123

8 (cont'd)	**Alternative method 3 – calculating tax and NI monthly**		
	58 000 – 12 570 – 37 700 or 7730	M1	may be implied
	(their 7730 ÷ 12) × 0.4 or [257.66, 257.67] **and** (37 700 ÷ 12) × 0.2 or 628.33	M1dep	oe higher rate of tax and standard rate tax 886 total tax implies M2
	(58 000 ÷ 12 – 4189) × 0.0325 or their 644.33 × 0.0325 or 20.94	M1	oe higher rate of NI
	(4189 – 1048) × 0.1325 or 416.18	M1	oe 437.12 total NI implies 1st, 3rd, and 4th M1
	their [257.66, 257.67] + their 628.33 + their 20.94 + their 416.18	M1	oe totals all deductions must include standard and higher rate for both tax and NI 1323.12 (monthly) implies M5
	58 000 ÷ 12 – their 1323.12	M1	their 1323.12 must include at least one amount of tax and at least one amount of NI
	3510.(..)	A1	
	their 3510.21 × 0.3 or 1000 ÷ their 3510.(..) or 0.28..	M1	
	1053.(..) and Yes or 28.(…)% and Yes	A1ft	oe ft their 3510.(…)
	Additional Guidance		
	6019..(…) for National Insurance is a common error from using only the standard rate The two marks for NI are not awarded and, as there is no higher rate used, the mark for totalling their standard and higher tax and NI cannot be awarded. The mark for subtracting from 58 000 may still be awarded		

Q	Answer	Mark	Comments	
9	8.75 ÷ 100 or 0.0875	M1	implied by correct answer	
	$\left(1+\frac{\text{their } 0.0875}{12}\right)^{12}-1$ or 0.091(09…) or 0.0911	M2	for M2 their 0.0875 must only have digits 875 (with or without zeros) M1 for one error a repeated error is classed as one error eg 365 substituted instead of 12 in both places	
	(9(%) and) 9.1…(%) and (Company) A or 0.09 and 0.091… and (Company) A	A1	oe	
	Additional Guidance			
	The first mark is for knowing that they must divide 8.75 by 100 so 0.0875 seen can be awarded the first M1 even if not used or used incorrectly eg $8.75 \div 100 = 0.0875$ $\left(1+\frac{8.75}{12}\right)^{12}-1 = 713$ should have used 0.0875 as it was stated so 8.75 is one error Similarly, 0.0875 used in the wrong place in the formula is still awarded the first M1 but the incorrect substitution is an error			M1 M1A0
	their 0.0875 substituted straight into the formula is not an error if it has only digits 875 with or without zeros eg $\left(1+\frac{8.75}{12}\right)^{12}-1$ (with 0.0875 not seen) eg Just shows the formula with values substituted $\left(1+\frac{0.875}{12}\right)^{12}-1$ eg $\left(1+\frac{1.0875}{12}\right)^{12}-1$ their 0.0875 cannot have digits other than 875 and zeros so 1.0875 is classed as an error. 0.0875 is not seen so the first mark cannot be awarded			M0M2A0 M0M2A0 M0M1A0