GCSE
MATHEMATICS
8300/2F

Foundation Tier Paper 2 Calculator

Mark scheme

June 2020

Version: 1.0 Final

206G8300/2F/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

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	6 : 8	B1	

Q	Answer	Mark	Comments
2	250°	B1	

Q	Answer	Mark	Comments
3	$x - 4$	B1	

Q	Answer	Mark	Comments
4	14	B1	

Q	Answer	Mark	Comments
5(a)	8	B1	
	Additional Guidance		
	$56 \div 7 = 8$		B1
	Answer of $\times 8$ (unless recovered)		B0
	Answer of $8x$ (unless recovered)		B0
	Award the mark for an embedded answer only if the answer is selected eg1 $7 \times 8 = 56$ with no answer or with incorrect answer eg2 $7 \times (8) = 56$ with no contradictory answer		 B0 B1

Q	Answer	Mark	Comments
5(b)	7	B1	
	Additional Guidance		
	$25 - 18 = 7$		B1
	$18 - 25 = 7$ (allow recovery)		B1
	Answer of -7 (unless recovered)		B0
	Answer of $7y$ (unless recovered)		B0
	Award the mark for an embedded answer only if the answer is selected eg1 $25 - 7 = 18$ with no answer or with incorrect answer eg2 $25 - (7) = 18$ with no contradictory answer		 B0 B1

Q	Answer	Mark	Comments
6(a)	9	B1	

Q	Answer	Mark	Comments
6(b)	3 9 9 9 12 14 15 16 18 18 20 or 20 18 18 16 15 14 12 9 9 9 3 or 3 9 9 9 12 14 or 20 18 18 16 15 14	M1	allow one miscopy, extra or omission in full ordered list
	14	A1	
	Additional Guidance		
	Answer only of 14		M1A1
	14 from an incorrect list will be M1 max eg 3 9 9 9 12 14 15 16 18 19 20 Answer 14		M1A0
	List ordered but clearly used for mean or mode or range in (b) eg1 3 + 9 + 9 + 9 + 12 + 14 + 15 + 16 + 18 + 18 + 20 = 143 Answer 13 eg2 3 9 9 9 12 14 15 16 18 18 20 = 143 Answer 13 eg3 3 + 9 + 9 + 9 + 12 + 14 + 15 + 16 + 18 + 18 + 20 Answer 13 eg4 3 9 9 9 12 14 15 16 18 18 20 Answer 9 (mode) eg5 3 9 9 9 12 14 15 16 18 18 20 Answer 17 (range)		M0A0 M0A0 M0A0 M0A0 M0A0
	Answer 13 may come from value between 12 and 14 eg1 3 9 9 9 12 14 15 16 18 18 20 Answer 13 (bod) eg2 3 9 9 9 12 14 15 16 18 20 Answer 13		M1A0 M1A0
	Allow the ordered list to be seen by the given list		

Q	Answer	Mark	Comments
7(a)	(3, 4)	B1	
	Additional Guidance		
	(3x, 4y)		B0

Q	Answer	Mark	Comments
7(b)	(0, 8)	B1	SC1 (4, 3) in (a) and (8, 0) in (b)
	Additional Guidance		
	(0x, 8y)		B0

Q	Answer	Mark	Comments
8(a)	Any even square whole number	B1	eg 4 or 16 or 36 or 64
	Additional Guidance		
	0		B1
	$2^2 = 4$		B1
	Answer only of 2^2		B0
	Answer only of $\frac{16}{4}$		B0

Q	Answer	Mark	Comments
8(b)	125 216 343 with no extras	B2	B1 125 216 343 seen with extras or two of 125 216 343 seen alone or with extras or 5^3 6^3 7^3
	Additional Guidance		
	125 216 343 seen with answer 5^3 6^3 7^3		B2
	5^3 6^3 7^3 only		B1
	125 216 343 seen with answer 5 6 7		B1
	5 6 7 only		B0
	Extras may be incorrect for B1		

Q	Answer	Mark	Comments
8(c)	3 and 72 or 6 and 36 or 9 and 24 or 12 and 18	B1	either order
	Additional Guidance		
	Answer line takes precedence		
	Award the mark for embedded answers only if the answers are selected eg1 216 ÷ 3 = 72 with no answer or with incorrect answer eg2 216 ÷ (3) = (72) with no contradictory answer eg3 3 × 72 in working with no contradictory answer		 B0 B1 B1

Q	Answer	Mark	Comments
9(a)	Valid reason	B1	eg the percentages do not add to 100(%) or there are 10(%) too many or they add to 110(%)
	Additional Guidance		
	One of the percentages is 10(%) too big		B1
	Allow 18 + 54 + 38 = 110		B1
	They add up to more than 100(%)		B1
	It does not equal 100(%)		B1
	It's not possible to have 110(%)		B1
	Condone eg percentages only go up to 100, percentages are out of 100, percentage = 100(%)		B1
	They don't add up correctly		B0
	There are too many adults		B0
	Seniors must also be adults		B0
	Ignore irrelevant statements alongside a correct statement eg the percentages do not add up to 100, there should be more seniors than juniors		B1
	Two statements, one correct, one incorrect eg the percentages do not add up to 100, they add up to 111		B0

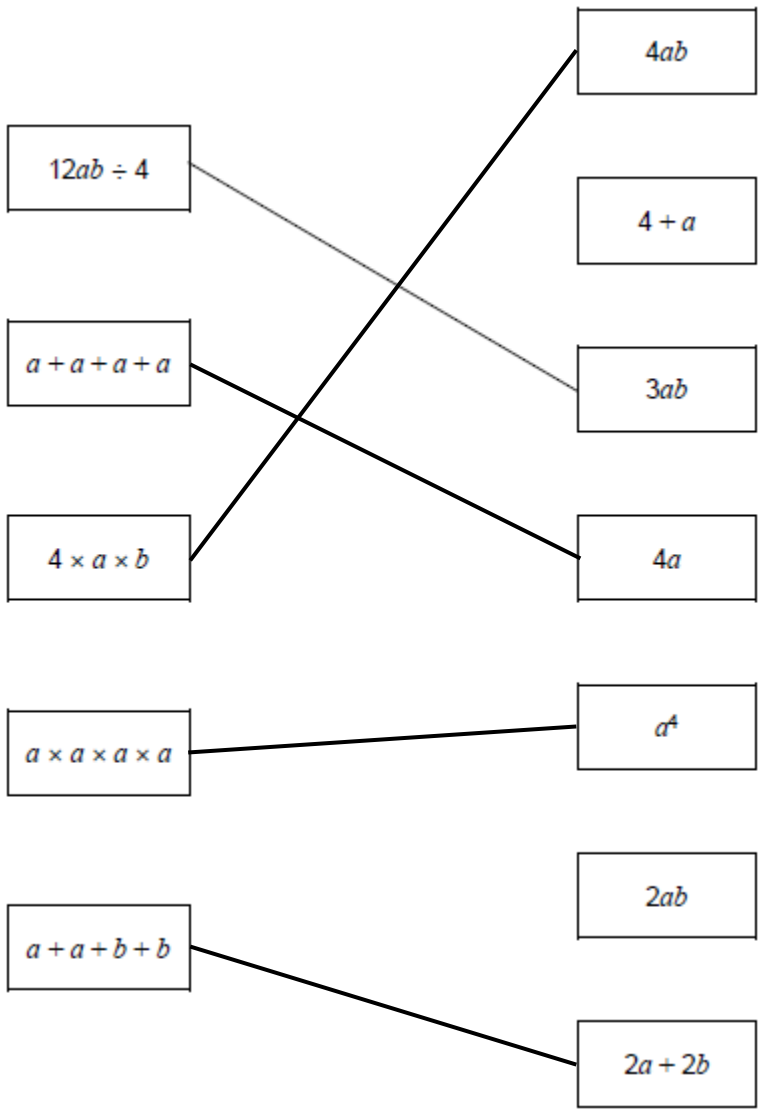
Q	Answer	Mark	Comments
9(b)	2×120 or 240	M1	oe
	$(3 \times) \frac{1}{5} \times 120$ or 24 or 72	M1	oe
	312	A1	SC2 528
	Additional Guidance		
	$\frac{1}{5}$ of 120 with no correct evaluation		2nd M0
	Do not allow a misread of the fraction		
	eg $.\frac{1}{5}.$ = 2% stated with no method shown and then 2% used		2nd M0
	Allow 3 adults and/or 2 juniors as a misread eg1 3×120 eg2 3×120 and $2 \times \frac{1}{5} \times 120$		M1 M2A0
	$240 \div 5$		M1M0A0
	$\frac{1}{5} \times 120 = 24$ and $120 - 24$ (working out $\frac{4}{5}$)		2nd M0 (but may score SC2)
	Using $\frac{4}{5}$ can score SC2 for the ft answer or a max of M1 for 240 seen		
	Allow up to M2 even if not subsequently used		

Q	Answer	Mark	Comments
10(a)	73	B1	
	Additional Guidance		
	Mark output box if answer line blank		

Q	Answer	Mark	Comments
10(b)	–21	B1	
	Additional Guidance		
	Mark output box if answer line blank		

Q	Answer	Mark	Comments
10(c)	3	B1	

Q	Answer	Mark	Comments
11	B and (A =) –11 and (B =) –13	B2	B1 (A =) –11 or (B =) –13
	Additional Guidance		
	If answer line blank, accept B clearly indicated in working		
	Accept –13 on answer line instead of B		
	Accept $47 \times 21 - 10^3$ on answer line instead of B		
	B with neither value correct		B0

Q	Answer	Mark	Comments
12	All 4 correct matches	B4	B1 for each correct match
	Additional Guidance		
			B4
	Two different matches from left hand column is choice for that box		
	Accept any unambiguous indication		

Q	Answer	Mark	Comments
13	318 ÷ 30 or 10.6(0) or 287 ÷ 28 or 10.25	M1	oe eg working in pence
	318 ÷ 30 – 287 ÷ 28 or 10.6(0) – 10.25 or 0.6(0) – 0.25 or 0.35	M1dep	oe eg working in pence
	35	A1	allow £0.35 pence or £0.35p pence
	Additional Guidance		
	Answer 0.35 pence		M2A0
	£0.35 seen but answer 0.35 pence		M2A0
	35p seen but answer 0.35 pence		M2A0
	Allow recovery of units eg 10.6(0) – 10.25 = 35		M2A1

Q	Answer	Mark	Comments
14	True False False True	B3	B2 three correct B1 two correct allow any unambiguous indication
	Additional Guidance		
	A tick and a cross in the same row – mark the tick		
	Only a cross used in a row – regard cross as their selection for that row		

Q	Answer	Mark	Comments	
15	**Alternative method 1**			
	150 × 0.19 or 28.5(0)	M1	oe eg working in pence	
	4 × 150 × 0.07 or 42	M1	oe eg working in pence 70.5 implies M2	
	70.50	A1	allow £70.50p	
	Alternative method 2			
	0.19 + 4 × 0.07 or 0.47	M1	oe eg working in pence	
	150 × their 0.47 or 70.5	M1dep	oe eg working in pence	
	70.50	A1	allow £70.50p	
	Additional Guidance			
	70.50 seen in working but answer of 70.5			M2A1
	70.5 without 70.50 seen			M2A0
	4 × 0.07 only			M0
	150 × 0.19 = 28 and answer 70 (implies 42)			M2A0
	150 × 0.19 and 150 ÷ 4			M1M0A0
	150 × 0.19 = 28.5 and 28.5 × 4			M1M0A0
	4 × 150 × 0.19			M0
	Allow up to M2 even if not subsequently used			

Q	Answer	Mark	Comments
16(a)	**Alternative method 1**		
	9×2 or 18 or $(8 - 2) \times 4$ or 24	M1	oe
	$9 \times 2 + (8 - 2) \times 4$	M1dep	oe eg $(9 - 4) \times 2 + (8 - 2) \times 4 + 4 \times 2$
	42	A1	
	Alternative method 2		
	8×4 or 32 or $(9 - 4) \times 2$ or 10	M1	oe
	$8 \times 4 + (9 - 4) \times 2$	M1dep	oe eg $(9 - 4) \times 2 + (8 - 2) \times 4 + 4 \times 2$
	42	A1	
	Alternative method 3		
	9×8 or 72 or $(8 - 2) \times (9 - 4)$ or 30	M1	oe
	$9 \times 8 - (8 - 2) \times (9 - 4)$	M1dep	oe
	42	A1	
	Additional Guidance		
	A correct area seen but not used may score M1		
	$9 \times 2 = 18$, $8 \times 4 = 32$ and 18×32		M1M0
	$9 \times 2 \times 8 \times 4$		M0
	The 2nd M is for a complete method that would lead to an answer of 42 eg $9 \times 2 = 18$, $6 \times 4 = 24$, $18 + 24 = 42$, then $42 \div 2 = 21$		M1M0
	Beware eg $8 + 4 + 8 + 4 = 24$ which is M0 without a correct area seen		M0
	Ignore any units given with answer		

Q	Answer	Mark	Comments
16(b)	Valid criticism	B1	eg the formula is $\frac{1}{2}$ × base × height or the answer is double the correct answer or he has forgotten the $\frac{1}{2}$ or it should be $\frac{1}{2}$ × 12 × 8 or it should be 48
	Additional Guidance		
	He needs to halve 12 (which is 6, 6 × 8 = 48)		B1
	He hasn't halved the base		B1
	0.5 × 12 × 8 = 48		B1
	His method was to work out a rectangle (insufficient)		B0
	He should divide by half		B0
	He didn't use the area of a triangle formula		B0
	He should have timesed all the measurements and divided by 2		B0
	Ignore irrelevant statements alongside a correct statement eg1 he has forgotten to divide by 2, the base should be shorter eg2 should have divided by 2, he worked out the area of a rectangle		 B1 B1
	Two statements, one correct, one incorrect eg1 he has forgotten to divide by 2, it should be 14 × 8 ÷ 2 eg2 should have divided by 2, he worked out the area of a square eg3 forgot to halve the base, should have been 6 × 8 = 49		 B0 B0 B0

Q	Answer	Mark	Comments
17(a)	reflection	B1	

Q	Answer	Mark	Comments
17(b)	rotation	B1	

Q	Answer	Mark	Comments
18	**Alternative method 1**		
	14 × 0.8 or 11.2 or 1.5 × 2 ÷ 0.8 or 3.75	M1	oe implied by 8.2 or 5.4(6…) or 5.47 or 5.5
	their 11.2 – 2 × 1.5 or their 11.2 – 3 or 8.2 or (14 – their 3.75) × 0.8 or 8.2	M1dep	oe implied by 5.4(6…) or 5.47 or 5.5
	their 8.2 ÷ 1.5 or 5.4(6…) or 5.47 or 5.5 or 5 → 7.5 or 6 → 9 with M2 seen	M1dep	oe
	6 with 5.4(6…) or 5.47 or 5.5 seen or 6 with 5 → 7.5 and 6 → 9 and M2 seen	A1	
	Alternative method 2		
	14 × 0.8 or 11.2	M1	oe implied by 7.4(6…) or 7.47 or 7.5 (packs)
	their 11.2 ÷ 1.5 or 7.4(6…) or 7.47 or 7.5 (packs) or 7 → 10.5 or 8 → 12 with M1 seen	M1dep	oe $\frac{14 \times 0.8}{1.5}$ is M2
	their 7.4(6…) – 2 or 5.4(6…) or 5.47 or 5.5 or 7 – 2 or 8 – 2 with M2 seen	M1dep	oe
	6 with 7.4(6…) or 7.47 or 7.5 seen or 6 with 7 → 10.5 and 8 → 12 and M2 seen	A1	

Mark scheme and Additional Guidance continues on the next page

Q	Answer	Mark	Comments
18 cont	**Alternative method 3** Working in weeks		
	1.5 ÷ 0.8 or 1.875	M1	oe implied by 7.4(6…) or 7.47 or 7.5 (packs)
	14 ÷ their 1.875 or 7.4(6…) or 7.47 or 7.5 (packs) or 7 → 13.1(25) or 8 → 15	M1dep	oe
	their 7.4(6…) – 2 or 5.4(6…) or 5.47 or 5.5 or 7 – 2 or 8 – 2 with M2 seen	M1dep	oe
	6 with 7.4(6…) or 7.47 or 7.5 seen or 6 with 7 → 13.1(25) and 8 → 15 seen	A1	
	Additional Guidance		
	Select the scheme that favours the student for the first 2 M marks even if not subsequently used		
	Alts 2 and 3 the 7.5 must be packs not 7.5 kg (from 5 × 1.5)		
	For the final mark of Alt 1, eg 5 → 7.5 and 0.7 (short) is sufficient evidence and there are equivalents for Alts 2 and 3		
	For the final mark of Alt 1, eg 6 → 9 and 0.8 (over) is sufficient evidence and there are equivalents for Alts 2 and 3		
	Accept repeated addition or subtraction of 1.5 if clear eg 1.5 + 1.5 + 1.5 + 1.5 + 1.5 = 7.5 implies 5 → 7.5		

Q	Answer	Mark	Comments
19	**Alternative method 1**		
	6.5 – 4 or 2.5	M1	
	50 ÷ their 2.5 or 50 × 100 ÷ their 2.5 or 2000	M1dep	oe
	1 cm represents 20 metres	A1	
	Alternative method 2		
	80 and 130 seen	M1	
	80 ÷ 4 with 130 seen or 130 ÷ 6.5 with 80 seen	M1dep	oe eg 20 × 4 = 80 with 130 seen
	1 cm represents 20 metres	A1	
	Additional Guidance		
	In Alt 1, 65 – 40 unless recovered		M0
	In Alt 1, 0.065 – 0.04 unless recovered		M0
	In Alt 2, 0.08 and 0.13 unless recovered		M0

Q	Answer	Mark	Comments
20(a)	(24 + 8 =) 32	B2	B1 $(2a =)$ 2 × 12 or $(2a =)$ 24 or $(b =)$ 8
	Additional Guidance		
	32 with no incorrect working		B2
	32 from incorrect working eg 22 + 10 = 32		B0
	24 + 9 = 33		B1
	22 + 8 = 30		B1
	$24a$ without a B1 response		B0
	$8b$ without a B1 response		B0
	$24a + 8b$ without a B1 response		B0
	Use of inequalities in answer without a B1 response		B0

Q	Answer	Mark	Comments
20(b)	An example where x and y are both negative and $\frac{y}{x} = 4$	B1	eg $x = -1$ and $y = -4$ values of x and y can be implied eg $\frac{-12}{-3}$ (= 4)
	Additional Guidance		
	Correct use of ÷ instead of fractions is allowed eg $-12 \div -3$		B1
	Must show the fraction or division or state which is x and which is y eg -1 and -4		B0
	Decimals and / or fractions may be used eg $\frac{-6.4}{-1.6}$ or $\frac{-2}{-\frac{1}{2}}$		B1
	One correct example among several attempts		B1

Q	Answer	Mark	Comments
21	**Alternative method 1**		
	30 × 8 or 240	M1	
	440 – their 240 or 200	M1dep	implied by 10 (medium) and 5 (large) or numbers of sweets in medium and in large totalling 200
	$12m + 16l$ where m and l are integers with $m = 2l$ or 12 × 2 + 16 or 120 (sweets in medium) and 80 (sweets in large) or 10 medium or 5 large	M1	eg 12 × 6 + 16 × 3 or 72 + 48 with 6 (medium) and 3 (large) shown medium or large may be implied
	30 : 10 : 5	A1	oe ratio eg 6 : 2 : 1
	Alternative method 2		
	30 × 8 or 240	M1	
	440 – their 240 or 200	M1dep	implied by 10 (medium) and 5 (large) or numbers of sweets in medium and in large totalling 200
	$12 \times 2x + 16x$ = their 200 or $x = 5$ or $12y + 16 \times \frac{1}{2}y$ = their 200 or $y = 10$	M1dep	oe equation in terms of large bags any letter oe equation in terms of medium bags any letter
	30 : 10 : 5	A1	oe ratio eg 6 : 2 : 1
	Additional Guidance		
	Ignore incorrect simplification if 30 : 10 : 5 seen		
	Answer 240 : 120 : 80		M1M1M1A0
	Award up to M3 even if working not subsequently used		

Q	Answer	Mark	Comments
22(a)	2 and 5 with no other roots	B2	either order B1 at least one correct root with up to one incorrect root SC1 (2, 0) or (5, 0) or (2, 5) or (5, 2)
	Additional Guidance		
	$x = 2$ and $x = 5$		B2
	2, 5 or 5, 2		B2
	(2, 0) and (5, 0) and 2 and 5		SC1
	(2, 0) and (5, 0) and -2 and -5		B0
	2, 0 and 5, 0 (both pairs imply coordinates)		SC1
	2, 0 or 5, 0 (one pair implies roots)		B1
	(0, 2) and (0, 5)		B0
	0, 2 and 0, 5 (both pairs imply coordinates)		B0
	0, 2 or 0, 5 (one pair implies roots)		B1
	Both answers embedded $2^2 - 7 \times 2 + 10 = 0$ and $5^2 - 7 \times 5 + 10 = 0$		B1
	$(x - 2)(x - 5)$		B0

Q	Answer	Mark	Comments
22(b)	3.5	B1	oe
	Additional Guidance		
	$x = 3.5$		B1
	$3.5x$		B0
	Ignore any y-coordinate even with brackets omitted eg (3.5, –2.25) or 3.5, –2 or $x = 3.5$ $y = -2.25$ or $x = 3.5$ $y = 2$		B1
	(–2.25, 3.5)		B0

Q	Answer	Mark	Comments
23(a)	Plots at least 3 points correctly	M1	$\pm\frac{1}{2}$ square
	All four points correctly plotted and joined	A1	$\pm\frac{1}{2}$ square ignore working for part (b)
	Additional Guidance		
	$\pm\frac{1}{2}$ square means half a small square horizontally **and** vertically		
	If a point is within tolerance the line must be within $\pm\frac{1}{2}$ square of their point		
	Mark intention for joining point to point		

Q	Answer	Mark	Comments
23(b)	[70, 78]	B1	
	Additional Guidance		
	Answer in range with or without working, with no graph or incorrect graph		B1
	70.5 – 75 on answer line (both values in range)		B1

Q	Answer	Mark	Comments
24	15	B2	B1 answer 3 or answer 5 or answer 3 (×) 5 or (75 =) 3 (×) 5 (×) 5 or (75 =) 3 (×) 5^2 or (105 =) 3 (×) 5 (×) 7 or (1) 3 5 15 25 (75) or (1) 3 5 7 15 21 35 (105)
	Additional Guidance		
	NB 15 from 3 + 5 + 7 does not score unless working for B1 seen elsewhere		
	Prime factor responses for B1 may be seen in repeated division, on a factor tree or in a Venn diagram eg1 3 5 5 in repeated division or factor tree for 75 eg2 3 5 7 inside one circle of a Venn diagram eg3 3 5 inside the intersection of a Venn diagram		 B1 B1 B1
	For products of prime factors, repeated division, factor trees and Venn diagrams, ignore inclusion of factors of 1		
	A repeated division needs to reach the final prime factor but does not need to reach 1		
	B1 can be awarded even if LCM is subsequently worked out		
	List of factors may be seen as factor pairs		

Q	Answer	Mark	Comments
25(a)	**Alternative method 1**		
	$200 - 2 \times 5 \times 5$ or $200 - 50$ or 150 or $4 \times 5 \times y$ or $20y$	M1	oe eg $5y + 5y + 5y + 5y$ implied by 37.5 or answer 937.5
	$4 \times 5 \times y = 200 - 2 \times 5 \times 5$ or $4 \times 5 \times y = 200 - 50$ or $4 \times 5 \times y = 150$ or $150 \div 4 \div 5$ or $150 \div 20$ or 7.5	M1dep	oe eg $20y = 150$
	187.5	A1	oe
	Alternative method 2		
	$200 - 2 \times 5 \times 5$ or $200 - 50$ or 150	M1	oe implied by 37.5 or answer 937.5
	$150 \div 4 \times 5$ or 37.5×5	M1dep	oe
	187.5	A1	oe
	Additional Guidance		
	Embedded 7.5 eg $4 \times 5 \times 7.5 = 150$		M1M1

Q	Answer	Mark	Comments
25(b)	It is smaller than the answer to part (a)	B1	

Q	Answer	Mark	Comments
26	39	B1	

Q	Answer	Mark	Comments
27	40 (women) and 44 (men) and No or 40 : 44 and No or 84 and No or 8 (women leave) and 2 (men arrive) and No	B2	oe B1 40 (women) and 44 (men) or 40 : 44 or 84 or 8 (women leave) and 2 (men arrive)
	Additional Guidance		
	NB 84 from incorrect working eg 41 + 43 = 84		B0
	For B1 the values may be seen among others eg1 20 : 22 30 : 33 40 : 44 50 : 55 eg2 21, 42, 63, 84, 105, … eg3 10, 20, 30, 40, 50, … and 11, 22, 33, 44, 55, … eg4 $\frac{44}{84}$ (implies 84)		B1
	For B2 the value(s) must be chosen by eg circling or a list stopping at that point and No must be indicated		

Q	Answer	Mark	Comments
28	**Alternative method 1** Total % for A after 6 tests – total % for B after 5 tests		
	60×5 or 300 or 52×5 or 260	M1	oe
	$\frac{24}{50} \times 100$ or 0.48×100 or 48	M1	oe 348 implies M1M1
	$60 \times 5 + \frac{24}{50} \times 100 - 52 \times 5$ or $300 + 48 - 260$ or 88	M1dep	oe eg $348 - 260$ dep on M1M1
	44	A1	allow $\frac{44}{50}$
	Alternative method 2 Total score for A after 6 tests – total score for B after 5 tests		
	$\frac{60}{100} \times 50$ or 30	M1	oe allow $\frac{30}{50}$ implied by 150 or 174
	$\frac{52}{100} \times 50$ or 26	M1	oe allow $\frac{26}{50}$ implied by 130
	$\frac{60}{100} \times 50 \times 5 + 24 - \frac{52}{100} \times 50 \times 5$ or $150 + 24 - 130$	M1dep	oe eg $174 - 130$ dep on M1M1
	44	A1	allow $\frac{44}{50}$

Mark scheme and Additional Guidance continues on the next two pages

Q	Answer	Mark	Comments
28 cont	**Alternative method 3** Total score for A after 6 tests – total score for B after 5 tests		
	50×5 or 250	M1	oe implied by 150 or 130 or 174
	$\frac{60}{100} \times 50 \times 5$ or 150 and $\frac{52}{100} \times 50 \times 5$ or 130	M1dep	oe allow $\frac{150}{250}$ and $\frac{130}{250}$
	$\frac{60}{100} \times 50 \times 5 + 24 - \frac{52}{100} \times 50 \times 5$ or $150 + 24 - 130$	M1dep	oe eg $174 - 130$
	44	A1	allow $\frac{44}{50}$
	Alternative method 4 Difference in scores after 5 tests + 6th score for A		
	$60 - 52$ or 8	M1	oe
	$\frac{60-52}{100} \times 50$ or 4	M1dep	oe eg $\frac{60}{100} \times 50 - \frac{52}{100} \times 50$ or $30 - 26$ allow $\frac{4}{50}$
	$\frac{60-52}{100} \times 50 \times 5 + 24$ or $4 \times 5 + 24$ or $20 + 24$	M1dep	oe
	44	A1	allow $\frac{44}{50}$

Additional Guidance is on the next page

28 cont	**Additional Guidance**	
	To award the 3rd M a calculation or a value (not an equation) must be seen	
	Select the scheme that favours the student for the first 2 M marks even if not subsequently used	
	Alt 1 Do not award 1st M for 300 if incorrect method seen eg $6 \times 50 = 300$ does not score the 1st M	
	Alt 1 Do not award 2nd M for 48 if incorrect method seen eg $100 - 52 = 48$ does not score the 2nd M	
	Alt 2 Do not award 2nd M for 26 if incorrect method seen eg $50 - 24 = 26$ does not score the 2nd M	

Q	Answer	Mark	Comments
29	$2625 \div 250$ or $2.625 \div 250$ or $2625 \div 0.000\,25$ or answer with digits 105	M1	oe eg $\frac{2.625 \times 1000}{250}$
	10.5	A1	oe
	Additional Guidance		
	Digits 105 may have additional zeros before 1 or after 5 eg1 $0.000\,105$ eg2 $10\,500$ eg3 10.05		 M1A0 M1A0 M0A0

Q	Answer	Mark	Comments
30	$\frac{9-3}{1--2}$ or $\frac{6}{3}$ or $2x$ (+ c) where c is a constant	M1	oe eg $\frac{3-9}{-2-1}$ or $\frac{-6}{-3}$
	2	A1	
	Additional Guidance		
	$2x$ may be implied eg $y - 3 = 2(x + 2)$		M1A0