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General Certificate of Secondary Education
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Linear Mathematics 4365F

(Specification 4365)

Paper 1 Foundation Tier 43651F

Final

Mark Scheme

Mark schemes are prepared by the Principal Examiner 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 examiners 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 examiner understands and applies it in the same correct way. As preparation for standardisation each examiner 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, examiners encounter unusual answers which have not been raised they are required to refer these to the Principal 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.

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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.

M	Method marks are awarded for a correct method which could lead to a correct answer.
M dep	A method mark dependent on a previous method mark being awarded.
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.
B dep	A mark that can only be awarded if a previous independent mark has been awarded.
Q	Marks awarded for quality of written communication.
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.
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 between *a* and *b* with *a* included but *b* not included
25.3 …	Allow answers which begin 25.3 e.g. 25.3, 25.31, 25.378.
Use of brackets	It is not necessary to see the bracketed work to award the marks.
Nms	No method shown

Paper 1 Foundation Tier

Q	Answer	Mark	Comments
1(a)	One thousand(,) six hundred (and) seven	B1	All in words
1(b)	50 or ten(s)	B1	Accept in words or figures
1(c)	18 000	B1	Accept in words
2(a)	60	B1	
2(b)	39	B1	Condone %
3(a)	Bar to 68 for Motorcycles in correct position	B1	Intended width should be 1 cm
3(b)	62	B1	
3(c)	22	B1ft	correct or ft their 3(b) – 40
3(d)	No or cannot tell **and** reason eg average speed means a range of values only an average, some go slower the graph does not show the speed of each car	B1	oe Need to mention average or a **clear, correct** reference to the given graph (eg using 62 and 40 correctly)

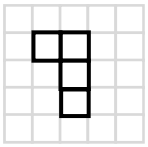
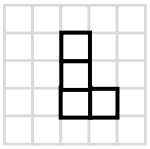
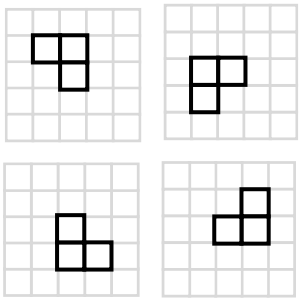
Q	Answer	Mark	Comments
4(a)		B1	May be joined at corners Condone not square or equal sizes Must have correct number of sticks
4(b)	31	B1	
4(c)	'either even or odd' indicated	B1	
5(a)	kilometres	B1	
5(b)	litres	B1	
5(c)	grams	B1	
6(a)	A, C	B2	B1 one correct and one missing **or** B1 one correct and one incorrect **or** B1 two correct and one extra
6(b)	B, D, E	B1	

Q	Answer	Mark	Comments
***7**	Attempt to add 5 darts (9, 7, 5 or 3)	M1	eg 5×9 (= 45) or $4 \times 9 + 7$ (= 43)
	9, 9, 7, 3, 3 or 9, 9, 5, 5, 3 or 9, 7, 7, 5, 3 or 9, 7, 5, 5, 5 or 7, 7, 7, 7, 3 or 7, 7, 7, 5, 5	A1	
	5 darts (9, 7, 5 or 3), **not all the same**, correctly totalled and gives answer [28, 34]	Q1	Strand (ii) oe
***7 Alt**	Attempt to subtract 4 or 5 darts (9, 7, 5 or 3) from 31	M1	eg $31 - 5 \times 3$ (= 16) or $31 - 4 \times 7$ (= 3)
	9, 9, 7, 3, 3 or 9, 9, 5, 5, 3 or 9, 7, 7, 5, 3 or 9, 7, 5, 5, 5 or 7, 7, 7, 7, 3 or 7, 7, 7, 5, 5	A1	
	4 darts (9, 7, 5 or 3), **not all the same**, correctly subtracted from 31 and gives answer 12 or less **or** 5 darts (9, 7, 5 or 3), **not all the same**, correctly subtracted from 31 and gives answer [-3, 3]	Q1	Strand (ii) oe

Q	Answer	Mark	Comments
8(a)	[158, 162]	B1	
8(b)	1.20(p) or 120p	B1ft	ft their weight in (a)
8(c)	1.20 + 1.60 (= 2.80)	M1	1.20 – 1.10 (= 0.10 or 10)
	1.10 + 1.40 (= 2.50)	M1	1.60 – 1.40 = (0.20 or 20)
	£0.30 or 30p	A1	SC1 2.30 (–) 1.90 = 40p oe SC1 2 × 1.60 (–) 2 × 1.40 = 40p oe SC1 2 × 1.20 (–) 2 × 1.10 = 20p oe
8(d)	Attempts to build up to within 750 ± 100 with weights less than or equal to 500 (no total needed) **or** Subtracts from 750 with weights less than or equal to 500	M1	oe $750 \div n$ with n a positive integer
	Shows two or more weights, less than or equal to 500, that total 750 eg 500 (+) 250 (= 750) 375 × 2 (= 750)	A1	SC1 Shows two or more weights, with one more than 500, that total 750
9(a)	4	B1	
9(b)	8	B1	

Q	Answer	Mark	Comments
10	29 and 31	B2	B1 any pair of **odd** numbers with a sum of 60 **or** B1 27 and 29 or 31 and 33
11	150 × 2 (= 300) **or** 120 + 50 (= 170)	M1	May be embedded
	150 × 2 – (120 + 50)	M1dep	oe
	130	A1	30 more
11 **Alt**	120 + 50 + 100 (= 270)	M1	
	(120 + 50 + 100) ÷ 2 **or** 150 × 2 (= 300)	M1dep	oe
	135 (tickets) **or** 270 and 300	A1	15 (tickets) more **or** 30 more
12(a)	Janet **and** reason eg She has (4) more tickets She has 5 times the chance	B1	oe correct comparative statement
12(b)	5 ÷ 300 seen or $\frac{5}{300}$ seen	M1	oe May be implied by 5 out of 300, 5 in 300, 1 out of 60, 1 in 60 etc Ratio is M0
	$\frac{1}{60}$	A1	Must be a fraction
12(c)	120 ÷ 6 or 6 × 20 = 120	M1	oe Builds up to 100 : 20
	20	A1	SC1 100

Q	Answer	Mark	Comments
13(a)	2×5 **and** 2×8 **or** $(5 + 8) \times 2$ **or** 10 **or** 16	M1	10 must come from 2×5 (not $2 + 8$)
	26	A1	
13(b)	$20 = l + l + 3 + 3$ or $(20 – 2 \times 3) \div 2$	M1	oe $10 = l + 3$ or $20 \div 2 – 3$
	7	A1	May be seen on diagram if no answer given
***14(a)**	045	Q1	Strand (i) for a 3 figure bearing 0.45 or 45 is Q0
14(b)	South West or 225 (°)	B1	SW but not West South
14(c)	[115, 119]	B1	
14(d)	[11, 11.5] ($\times$ 10)	M1	
	[110, 115]	A1	SC1 for any measurement seen (in cm) correctly multiplied by 10

Q	Answer	Mark	Comments
15	 **A**	B1	Only outline needed. Can be anywhere on grid Internal lines not necessary (may be dashed) Shape may be shaded (even in chequer-board fashion)
	 **B**	B1	Only outline needed. Can be anywhere on grid Internal lines not necessary (may be dashed) Shape may be shaded (even in chequer-board fashion)
	 **C**	B1	Any orientation (as shown) Only outline needed. Can be anywhere on grid Internal lines not necessary (may be dashed) Shape may be shaded (even in chequer-board fashion)
16	$\frac{40 \times 200}{80}$	M1	M1 for any two shown in the appropriate calculation M1 for 41 ≈ 40 **and** 198 ≈ 200 **and** 77 ≈ 80 clearly stated if not used in a calculation
	100	A1	Correct answer only is M1A1 but must use correct approximations if working is seen

Q	Answer	Mark	Comments
17	Substitutes 10 into **at least two** expressions and evaluates correctly **or** n = 10 substituted into **all five** expressions ie $\frac{1}{10}$, 10 – 1, 10 + 1, 10^2 and $\sqrt{10}$	M1	$\frac{1}{10}$ (oe) , 9, 11, 100, [3, 4]
	Evaluates all 5 expressions correctly ($\sqrt{10}$ can be left as $\sqrt{10}$) **or** $\frac{1}{10}$, $\sqrt{10}$, 10 – 1, 10 + 1, 10^2 written in either order	A1	If $\sqrt{10}$ evaluated and not in range [3, 4] then this is A0 So if not evaluated only the expressions in this or the reverse order will allow the last two marks
	n – 1 **or** 9 **or** 10 – 1	A1ft	Do not ft if three expressions evaluated incorrectly ft on M1, A0 if $\sqrt{10}$ given a value **and** 5 expressions evaluated, with **at least 3** correct **or** ft on M1, A0 if $\sqrt{10}$ not evaluated, with **at least three** correct out of $\frac{1}{10}$, 9, 11 or 100, but the median given implies that $\sqrt{10}$ used in the correct place if the numbers were arranged in order Median may be given as a value, an expression in n or an unevaluated expression using 10

Q	Answer	Mark	Comments
18	$2 \times 4 + 3 \times 3 + 5 \times 1$ **or** $8 + 9 + 5$	M1	22 has to come from correct working
	(30 – their 22) ÷ 4	M1dep	their 22 + 4a = 30
	2	A1	First M must be scored
18 **Alt**	Guess a value for a and correctly works out $\sum xf$	M1	
	Guesses a second value nearer to the correct answer and correctly works out $\sum xf$	M1dep	
	2	A1	First M must be scored

Q	Answer	Mark	Comments
19	(550 – 250) ÷ 3	M1	J + W = 250 **or** J + 4W = 550
	100	A1	3W = 300 **or** W = 100
	250 – their 100	M1dep	100 + J = 250 **or** 400 + J = 550
	150	A1	150
19 Alt 1	$\frac{4}{5} - \frac{1}{5}$ $(= \frac{3}{5})$	M1	
	their $\frac{3}{5}$ = 300 **or** $\frac{1}{5}$ = 100	A1	
	250 – their 100	M1dep	
	150	A1	
19 Alt 2	550 marked by top division **and** 250 marked by bottom division on **same** diagram	M1	
	300 indicated as difference on diagram or 350 and 450 written by intermediate divisions	A1	100 marked between any two divisions is M1, A1
	150 marked at bottom	M1dep	
	150 stated as answer	A1	
19 Alt 3	Guesses a value for weight of jug, subtracts from 250, multiplies answer by 4 and adds to their value	M1	
	Correct calculations	A1	
	Guesses a second value for weight of jug nearer to 150 and **correctly** calculates all values	M1dep	
	150	A1	

Q	Answer	Mark	Comments
20	$3x + 6 = 2x - 1$	M1	$x + 2 = \frac{2}{3}x - \frac{1}{3}$
	$3x - 2x = -1 - 6$	M1	This mark is for rearranging their expansion correctly to get x terms on one side and number terms on the other $x - \frac{2}{3}x = -\frac{1}{3} - 2$ (oe)
	–7	A1ft	ft on one error
21	5^2 **and** 12^2 seen oe	M1	25 **and** 144 **or** 169
	$\sqrt{(25 + 144)}$ **or** $\sqrt{169}$	M1dep	either 25 **or** 144 correct
	13	A1	Condone scale drawing with answer 13