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General Certificate of Secondary Education
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Linear Mathematics 4365

(Specification 4365)

Paper 2 Foundation Tier 43652F

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.

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

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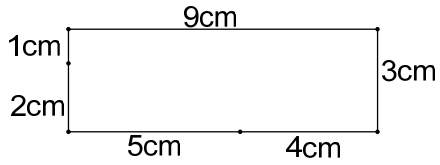
Q	Answer	Mark	Comments
1	diameter	B1	
	circumference	B1	
	tangent	B1	
	chord	B1	
2(a)	[3.5, 3.7]	B1	oe as long as correct units stated Accept [35 mm, 37 mm]
2(b)	*DE*	B1	
2(c)	*AB*	B1	
2(d)	Evidence of counting squares or area of one rectangle seen	M1	e.g. 3 × 2 or 6 or 5 × 2 or 10 or 3 × 3 or 9 or 5 × 5 or 25 Evidence of counting areas e.g. dots or numbers in squares (need not be complete)
	16	A1	
	cm²	B1	
3(a)	7	B1	
3(b)	3 symbols drawn	B1	
3(c)	6 × 2 or 12 or 5 × 2 or 10	M1	
	6 × 2 – 5 × 2 or 12 – 10	M1dep	10 + 2 = 12
	2	A1	

Q	Answer	Mark	Comments
4(a)	(1, 6)	B1	
4(b)	(4, 6)	B1	
4(c)	Point plotted at (4, y) such that $0 \leq y < 6$ **and** $y \neq 4$	B1	e.g. (4, 0) or (4, 1) or (4, 2) or (4, 3) or (4, 5)
5(a)	42	B1	
5(b)	32 and 68	B1	In any order
5(c)	81	B1	
5(d)	32	B1	
6(a)	8.85	B1	Accept $\frac{17}{20}$
6(b)	12.5 or $12\frac{1}{2}$	B1	Accept $\frac{25}{2}$
6(c)	$\frac{25}{100} \times 98$ or $\frac{25}{100} \times 9800$	M1	oe Allow 2450 (p) or 24.5
	24.50	Q1	Strand (i) Correct money notation. SC1 for 73.50

Q	Answer	Mark	Comments
7(a)	3 × 18 + 110	M1	
	164	A1	
7(b)	240 – 150 (= 90)	M1	oe Correctly evaluated trial e.g. 1 × 18 + 150 = 168
	$\frac{\text{their } 90}{18}$	M1dep	A different correctly evaluated trial, e.g. 2 → 186 3→ 204 4 → 222 6 → 258
	5	A1	SC1 for 13.3(...) or 13
8(a)	5(p) and 20(p)	B2	Any order B1 for 5(p) or 20(p) or 25(p) (change)
8(b)	(5 + 10 =) 15	M1	One correctly evaluated trial with equal number of 5p and 10p coins e.g. 5 (+) 10 (+) 5 (+) 10 (=) 30
	$\frac{90}{\text{their } 15}$	M1 dep	Another correctly evaluated trial with equal number of 5p and 10p coins or 30p and 60p (= 90p)
	6	A1	SC2 for 6 with no working SC2 for 30p on answer line SC1 for 30 on answer line
9	0.207 27% $\frac{56}{200}$	B2	oe any format B1 for 0.27 or $\frac{27}{100}$ or $\frac{54}{200}$ or 20.7(%) or $\frac{20.7}{100}$ or $\frac{41.4}{200}$ or 0.28 or 28(%) or $\frac{28}{100}$

Q	Answer	Mark	Comments
10	6 correct faces	B3	B2 for 4 or 5 correct faces B1 for 2 or 3 correct faces
11(a)	25	B1	
11(b)	$2n + 1$	B1	oe Accept $n \times 2 + 1$ or $n + n + 1$ Do not accept $n2 + 1$ Do not ignore fw , mark final answer
11(c)	$(49 – 1) \div 2$	M1	oe $24 \times 2 + 1 = 49$
	24	A1	SC1 for 25 or 96 or 48.5
12(a)	$5 \times 3 \times 2$	M1	Allow one error oe
	30	A1	
12(b)	270 ÷ their 30	M1	oe (£)2.70 ÷ their 30 or 0.09
	9	A1 ft	£0.09
13	$(1 + 2 + 3 + 4 + 5 + 9) \div 2$	M1	
	Correct rectangle	A1	
13 **Alt**		B2	B2 for indication that answer is 9 cm by 3 cm B1 for one pair of possible matching opposite sides labelled or shown e.g. two 9s, two 7s, two 6s, two 5s, two 4s, two 3s

Q	Answer	Mark	Comments
14(a)	180 – 42 – 90 or 90 – 42 or 138 – 90	M1	oe 90 + 42 + 48 =180
	48	A1	
14(b)	360 – 102 – 64 – 57 (= 137) or Angles in quadrilateral = 360 seen or implied	M1	oe e.g. 223 + 137 = 360
	180 – their 137	M1	
	43	A1	
15(a)	33	B1	
15(b)	17	B1	
15(c)	9^{th} value seen or implied	B1	Accept e.g. 9^{th} is middle number Do not accept e.g. It is the middle number
15(d)	47	B1	
16	Fully correct labelled pie chart Spain 180^o Portugal 90^o Turkey 30^o Other 60^o Tolerance ± 2^o	B4	B3 Two or three correct sectors and four sectors labelled correctly B3 Fully correct but incomplete or no labels B2 All angles calculated B2 Two or three sectors correct but incomplete or no labels B1 At least one angle calculated in table B1 One sector drawn and labelled correctly

Q	Answer	Mark	Comments
17	One correct valid calculation 10 × 1.5 (= 15) or 1.5 ÷ 0.5 (= 3) or 1.5 × 2 (= 3) or 0.5 × 6 (= 3)	M1	Total amount of water needed Number of bottles per day needed Number of litres per pack Calculations can be embedded
	A different correct valid calculation 10 × 1.5 (= 15) or 1.5 ÷ 0.5 (= 3) or 1.5 × 2 (= 3) or 0.5 × 6 (= 3) or 15 ÷ 0.5 (= 30) or 10 × 3 (= 30) or 6 ÷ 3 (= 2) or 3 ÷ 1.5 (= 2) or 1.5 ÷ 3 (= 0.5)	M1	Total amount of water needed Number of bottles per day needed Number of litres per pack Total number of bottles needed Total number of bottles needed Number of days per pack Number of days per pack Number of packs needed per day Calculations can be embedded
	15 ÷ 3 or 30 ÷ 6 or 10 ÷ 2 or 0.5 × 10	M1dep	
	5	A1	

Q	Answer	Mark	Comments
18	2 × 1.25 (= 2.5)	M1	
	10 – 5.4 (= 4.6) or 10 – 2.5 (= 7.5)	M1	
	10 – 5.4 – 2.5 or 7.5 – 5.4 or 4.6 – 2.5	M1	oe
	2.1(0)	A1	
	(£)4.20	Q1ft	strand (iii) ft their 2.1 × 2 All method marks must be awarded and correct money notation
19(a)	$9x + 6y$	B2	B1 for each term Do not ignore fw
19(b)	$4x + 12$	B1	Do not ignore fw
19(c)	$x(x – 5)$	B1	Do not ignore fw
20(a)	2	B1	
20(b)	Four points plotted correctly	B2	$\frac{1}{2}$ square tolerance B1 for 2 or 3 points plotted correctly
20(c)	Straight ruled line of best fit correctly drawn within tolerance	B1	
20(d)	Correct reading off for their line of best fit	B1ft	$\frac{1}{2}$ square tolerance ft their line of best fit Accept [32, 42] if no line of best fit seen

Q	Answer	Mark	Comments
21	12 000 – 10 000 or 2000	M1	
	$\frac{\text{their } 2000}{12}$ or 166.(6 …) or 166.7	M1	
	0.85 × 195 (= 165.75) or 0.15 × 195 (= 29.25)	M1	oe
	165.75 and 166.(6 …) or 166.7	A1	
	Rent it	Q1ft	strand (iii) correct conclusion from their answers Comparing their 165.75 (85%) with their 166
21 **Alt**	12 000 – 10 000 or 2000	M1	
	0.85 × 195 (= 165.75) or 0.15 × 195 (= 29.25)	M1	12 × 195 (= 2340) oe
	their 165.75 × 12 or (195 – their 29.25) × 12 or 2000 ÷ their 165.75	M1	0.85 × their 2340 or 0.15 × their 2340 (= 351) oe
	1989 and 2000 or 12.06 or 12.07 or 12.1 and 12	A1	oe £11 cheaper
	Rent it	Q1ft	strand (iii) correct conclusion from their answers Comparing their 1989 (85%) with their 2000 or Comparing their 12.06 with 12

Q	Answer	Mark	Comments
22(a)	their 9 × 0.6 or their 9 ÷ 0.5 or 0.6 ÷ 0.5 (= 1.2)	M1	oe
	$\frac{\text{their } 9 \times 0.6}{0.5}$	M1dep	oe
	10.8	A1	
22(b)	13.6 × 3600 or 13.6 ÷ 1000 or 3600 ÷ 1000	M1	oe 50 × 1000 or 50 ÷ 3600 or 1000 ÷ 3600
	$\frac{13.6 \times 3600}{1000}$	M1	$\frac{50 \times 1000}{3600}$
	48(…) or 49	A1	13.8(…) or 13.9
Alt 22(b)	13.6 × 3600	M1	13.6 ÷ 1000
	50 × 1000	M1	50 ÷ 3600
	48 960 or 49 000 and 50 000	A1	0.0136 and 0.0138(...) or 0.0139
23(a)	0.05	B1	
23(b)	150 × 0.92	M1	
	138	A1	SC1 for 12
24	12 seen or 6 seen for radius	B1	
	$\pi \times$ their 12 (÷ 2)	M1	oe
	$2 \times \frac{\pi \times \text{their } 12}{2}$ + their 12 + their 12	M1dep	oe
	61.6(…) or 61.7 or 62	A1	Accept $12\pi + 24$

Q	Answer	Mark	Comments
25	n + 18 or 18 ÷ 2 or 9 or 45 × 2	M1	Tries two numbers with a difference of 18 or tries two numbers with a sum of 90
	n + n + 18 or n + 9 or 45 – 9 or 45 + 9 or their 90 – 18 (= 72) or their 90 + 18 (= 108)	M1	oe Different trial
	n + n + 18 = 90 or n + 9 = 45 or 45 – 9 and 45 + 9 or their 72 ÷ 2 or their 108 ÷ 2	M1	oe 3rd trial
	Amy 36	A1	36 and 54 in any order
	Chris 54	A1	