

# Mark Scheme

## Sample Assessment Material

GCSE

GCSE in Mathematics Specification A  
Foundation Tier

Paper 2: (Calculator)

## General Marking Guidance

- All candidates must receive the same treatment. Examiners must mark the first candidate in exactly the same way as they mark the last.
- Mark schemes should be applied positively. Candidates must be rewarded for what they have shown they can do rather than penalised for omissions.
- All the marks on the mark scheme are designed to be awarded. Examiners should always award full marks if deserved, i.e. if the answer matches the mark scheme. Examiners should also be prepared to award zero marks if the candidate's response is not worthy of credit according to the mark scheme.
- Where some judgement is required, mark schemes will provide the principles by which marks will be awarded and exemplification may be limited.
- Crossed out work should be marked UNLESS the candidate has replaced it with an alternative response.
- Mark schemes will indicate within the table where, and which strands of QWC, are being assessed. The strands are as follows:

*i) ensure that text is legible and that spelling, punctuation and grammar are accurate so that meaning is clear*

Comprehension and meaning is clear by using correct notation and labelling conventions.

*ii) select and use a form and style of writing appropriate to purpose and to complex subject matter*

Reasoning, explanation or argument is correct and appropriately structured to convey mathematical reasoning.

*iii) organise information clearly and coherently, using specialist vocabulary when appropriate.*

The mathematical methods and processes used are coherently and clearly organised and the appropriate mathematical vocabulary used.

### Guidance on the use of codes within this mark scheme

M1 - method mark

A1 - accuracy mark

B1 - working mark

C1 - communication mark

QWC - quality of written communication

oe - or equivalent

cao - correct answer only

ft - follow through


sc - special case

Specification A: Paper 2 Foundation Tier

1MA0/2F				
Question	Working	Answer	Mark	Additional Guidance
1.	$1.60 + 2.05 = 3.65$	15p	2	B1 £3.65 oe B1 15p
<b>Total for Question: 2 marks</b>				
2.				
(a)(i)		60	2	B1 60 cao
(ii)		50		B1 50 cao
(b)		2 full packets 1.5 full packets	2	B1 2 full packets cao B1 1.5 full packets
<b>Total for Question: 4 marks</b>				
3.				
(a)		$\frac{3}{4}$	2	B2 $\frac{3}{4}$ cao (B1 $\frac{18}{24}, \frac{12}{16}, \frac{9}{12}, \frac{6}{8}$ )
(b)		Any 16 squares shaded	1	B1 Any 16 squares shaded
<b>Total for Question: 3 marks</b>				

1MA0/2F					
Question	Working	Answer	Mark	Additional Guidance	
4. (a)		2	1	B1 cao	
(b)	$7 + 4 + 3 + 5 + 2 + 4 + 5 = 30$ $6 + 2 + 1 + 5 + 3 + 3 + 8 = 28$ <b>OR</b> $1 + 2 + 2 + 0 - 1 + 1 - 3 = 2$	2 hours	2	M1 finds the totals of Robin and Helen. A1 cao <b>OR</b> M1 find the differences of Robin and Helen A1 cao	
(c)	2 3 4 4 5 5 7	4 hours	2	M1 orders the values A1 cao	
(d)	$(6 + 8) \div 7$	2	2	M1 attempts to find mean A1 2 cao	
<b>Total for Question: 7 marks</b>					
5. (a)		Correct plot	1	B1 Cross placed within 0.5 cm to right of 0 inclusive	
(b)		Correct plot	1	B1 Cross placed within 0.5 cm to left of 1 inclusive	
(c)		$\frac{1}{2}$	1	B1 0.5 oe	
<b>Total for Question: 3 marks</b>					

1MA0/2F					
Question	Working	Answer	Mark	Additional Guidance	
6.					
(i)		5 or 17	1	B1 5 or 17 or both	
(ii)		4, 8, or 16	1	B1 for one, two or three of 4, 8 or 16	
(iii)		5 and 6	1	B1 5 and 6 oe	
(iv)		8	1	B1 cao	
<b>Total for Question: 4 marks</b>					
7.	8.5 cm line drawn angles at B and C drawn	Correct Construction of triangle	3	B1 8.5 cm line drawn tolerance $\pm 0.2$ cm B1 angles at B and C drawn tolerance $\pm 2^\circ$ B1 fully correct within tolerance	
<b>Total for Question: 3 marks</b>					
8.					
(a)		B, A, C	1	B1 cao	
(b)		£40	1	B1 cao	
(c)		C + reason	2	C2 correct + comparison with the two other tariffs (C1 correct + comparison with one other tariff or line drawn at 60 up from the time axis to intersect at least one line)	
<b>Total for Question: 4 marks</b>					
9.	153 + 400 + 413 = 966 Number of litres used = 966 $\div$ 6 = 161 Cost of fuel 161 $\times$ 98.9p = £159.23 Day cost = 3 $\times$ 90 = 270 Total = £159.23 + £270	429.23	8	B1 any one correct distance identified M1 153 + 400 + 413 A1 966 M1 '966' $\div$ 6 M1 '161' $\times$ 98.9 M1 3 $\times$ 90 M1 '159.23' + '270' A1 cao	
<b>Total for Question: 8 marks</b>					

1MA0/2F				
Question	Working	Answer	Mark	Additional Guidance
10.				
(a)	$\frac{156 + 174 - 12.5}{2}$	157.75	2	M1 substitute correctly A1 157.75 or 158
(b)	$\frac{j + j - 12.5}{2} = 162$ $2j - 12.5 = 324$ $\frac{324 + 12.5}{2}$	168	3	M1 $\frac{j + j - 12.5}{2} = 162$ M1 correct method to isolate $j$ A1 168 or better
<b>Total for Question: 5 marks</b>				
11.				
(a)	complete diagram at end 		4	M1 quarter circle centre D radius 4 cm A1 clear indication of region by shading in or shading out M1 straight line parallel to BC 3 cm away A1 clear indication of the region by shading in or shading out.
(b)	QWC i, ii $\text{Area} = \frac{\pi \times 4^2}{4} = 12.56637\dots$ $\text{Area} = 3 \times 8 = 24$	43	6	M1 $\pi \times 4^2$ M1 $3 \times 8$ A1 sight of either correct area A1 36.56637... M1 $8 \times 10 - '36.56637\dots' = 43.4336\dots$ C1 43 QWC: Decision should be stated, following on from working out
<b>Total for Question: 10 marks</b>				
12.				
FE	$3 \times 2.5 = 7.50$ $4 \times 1.75 = 7$ $75.50 + 7.50 + 7 = 90$ $9 + 4.5 + 2.25 = 15.75$	105.75	6	B1 3 and 7.50 B1 4 and 7 B1 90 ft M1 $9 + 4.5 + 2.25$ seen A1 15.75 A1 cao
<b>Total for Question: 6 marks</b>				
13.				
		154°	3	B1 for 38° B1 for 64° B1 cao
<b>Total for Question: 3 marks</b>				

1MA0/2F				
Question	Working	Answer	Mark	Additional Guidance
14.	$2x + 2x + 40 + 3x - 30 + 150 - x$ $+ 2x = 540$ $8x + 140 = 540$ $x = 50$	100°	4	M1 $2x + 2x + 40 + 3x - 30 + 150 - x + 2x$ M1 collects terms correctly A1 $x = 50$ A1 cao
<b>Total for Question: 4 marks</b>				
15.	(a)	5 m	1	B1 cao
	(b)	10:30	1	B1 10:25 – 10:35
	(c)	18:10 – 18:30	1	B1 18:10 – 18:30
<b>Total for Question: 3 marks</b>				
16.	$\sqrt{6.4}$ $8.15$	0.31040762 ...	2	M1 correct order of evaluation as evidenced by sight of 6.4 or 8.15 A1 0.31040(762....)
<b>Total for Question: 2 marks</b>				

1MA0/2F				Additional Guidance
Question	Working	Answer	Mark	
17.	$f(x) = x^3 - 5x$ $x$ 4.00 4.10 4.20 4.30 4.40  4.50 4.60 4.70 4.80 4.90 5.00 4.35  68.62 or 68.63 74.34 80.32 86.59 93.15 100.00 60.56	4.3	4	B2 for trial between 4.3 and 4.4 inclusive (B1 for trial between 4 and 5 inclusive) B1 for different trial between 4.33 and 4.37 inclusive B1 (dep on at least one previous B1) for 4.3 only NB trials where $x$ has 1 d.p should be rounded or truncated to at least 2 SF; trials where $x$ has 2 d.p. or more should be rounded or truncated to at least 3 SF
<b>Total for Question: 4 marks</b>				
18. QWC ii	Alan $60 + 80 = 140$ $140 \div 5 = 28$ Bhavana $60^2 + 80^2 = 10000$ $\sqrt{10000} = 100$ $100 \div 3 = 33.33333 \dots$	Alan, with statement supporting explanation	6	B1 Alan runs 140 M1 '140' $\div 5$ M1 $60^2 + 80^2$ A1 100 A1 28 or 33.33333... seen  C1 Alan stated with comparison of times and times attributed to correct person QWC: Decision stated with supporting explanation
<b>Total for Question: 6 marks</b>				

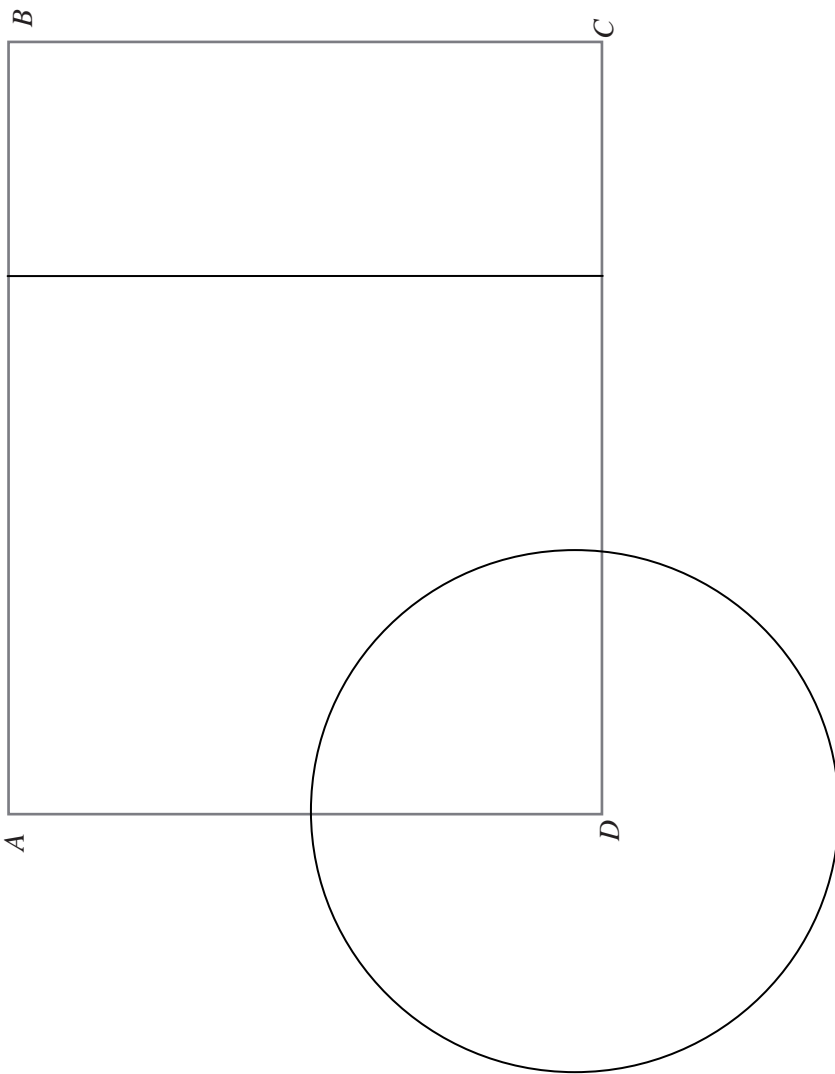


1MA0/2F		Working	Answer	Mark	Additional Guidance																										
19.	(a)	0, -2, -2, 0, 4, 10	-2, 10	1	B1, B1 for each cao																										
	(b)		Smooth curve	2	B1 correct plot of their values B1 smooth curve through their points providing at least 1 mark earned in (a)																										
	(c)	Draws $y = 7$ <b>OR</b> T&I <table border="1" style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th>Width</th> <th>Area</th> </tr> </thead> <tbody> <tr><td>4</td><td>4</td></tr> <tr><td>4.1</td><td>4.51</td></tr> <tr><td>4.2</td><td>5.04</td></tr> <tr><td>4.3</td><td>5.59</td></tr> <tr><td>4.4</td><td>6.16</td></tr> <tr><td>4.5</td><td>6.75</td></tr> <tr><td>4.6</td><td>7.36</td></tr> <tr><td>4.7</td><td>7.99</td></tr> <tr><td>4.8</td><td>8.64</td></tr> <tr><td>4.9</td><td>9.31</td></tr> <tr><td>5</td><td>10</td></tr> <tr><td>4.55</td><td>7.0525</td></tr> </tbody> </table>	Width	Area	4	4	4.1	4.51	4.2	5.04	4.3	5.59	4.4	6.16	4.5	6.75	4.6	7.36	4.7	7.99	4.8	8.64	4.9	9.31	5	10	4.55	7.0525	4.5	2	M1 draw $y = 7$ A1 4.5 – 4.6 ft from graph <b>OR</b> Uses T&I B2 4.5 with $x^2 - 3x$ evaluated correctly at 4.5 and 4.6 (B1 Locates 'root' between 4 and 5 at least 2 evaluations or refers to table)
Width	Area																														
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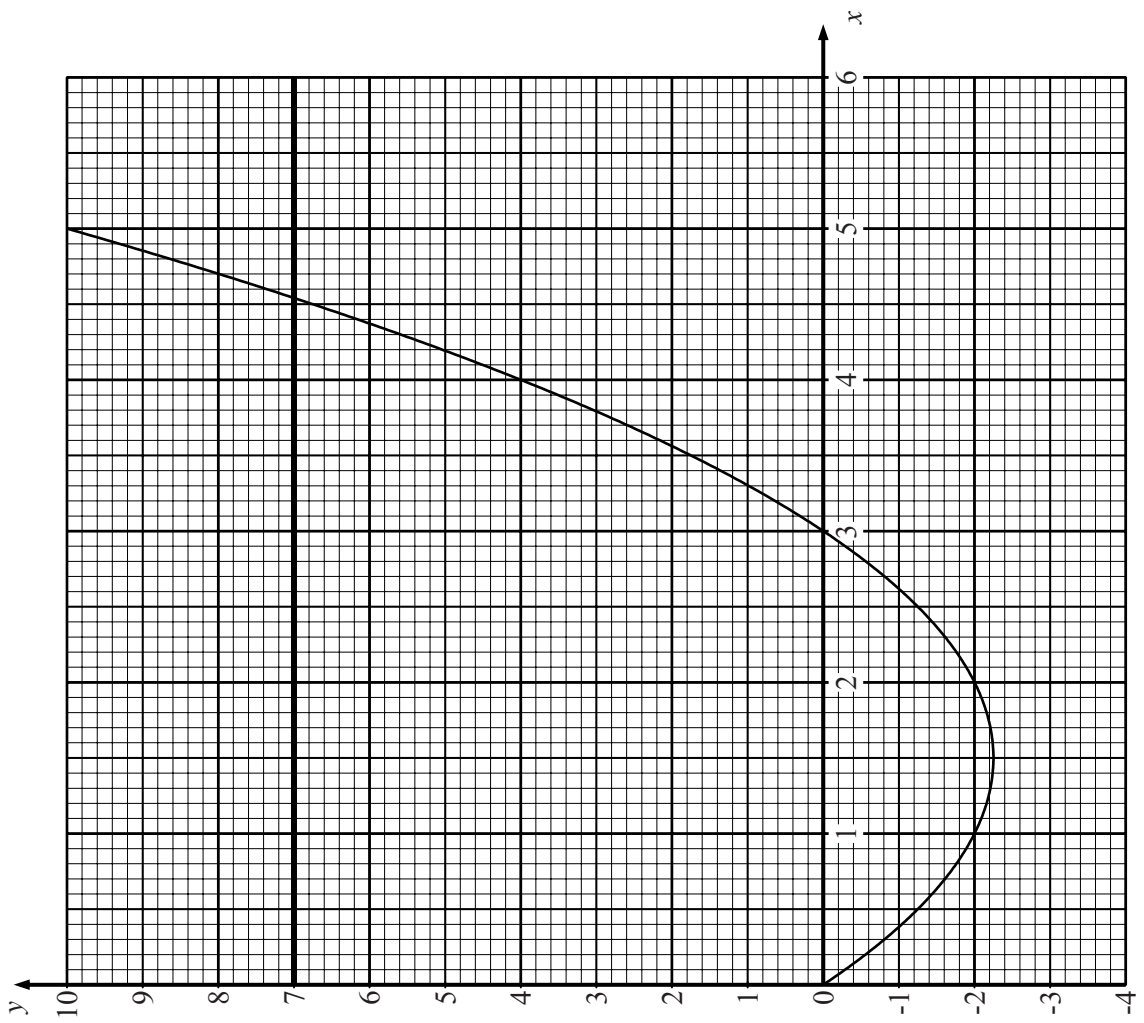
1MA0/2F			
Question	Working	Answer	Mark
20. FE	Area of land = $30 \times 10$ = $300 \text{ m}^2$ Perimeter of land = $30 + 30 + 10 + 10 = 80 \text{ m}$ No. of hens = $300 \div 0.8 = 375$ Cost of hens = $375 \times 7.5 =$ $\text{£}2812.50$ Cost of fencing = $80 \times 9.85$ = $\text{£}788$ Total cost = $\text{£}2812.50 + \text{£}788$ = $\text{£}3600.50$	$\text{£}3600.50$	9
			<b>Additional Guidance</b> M1 for area of land $30 \times 10 = 300 \text{m}^2$ M1 for perimeter of land = $30 + 30 + 10 + 10 = 80 \text{m}$ M1 for " $300 \div 0.8$ " A1 (ft) for 375 hens M1 for " $375 \times 7.5$ " A1 (ft) for $\text{£}2812.50$ M1 for " $80 \times 9.85$ " A1 (ft) for $\text{£}788$ A1 cao for total cost
<b>Total for Question: 9 marks</b>			

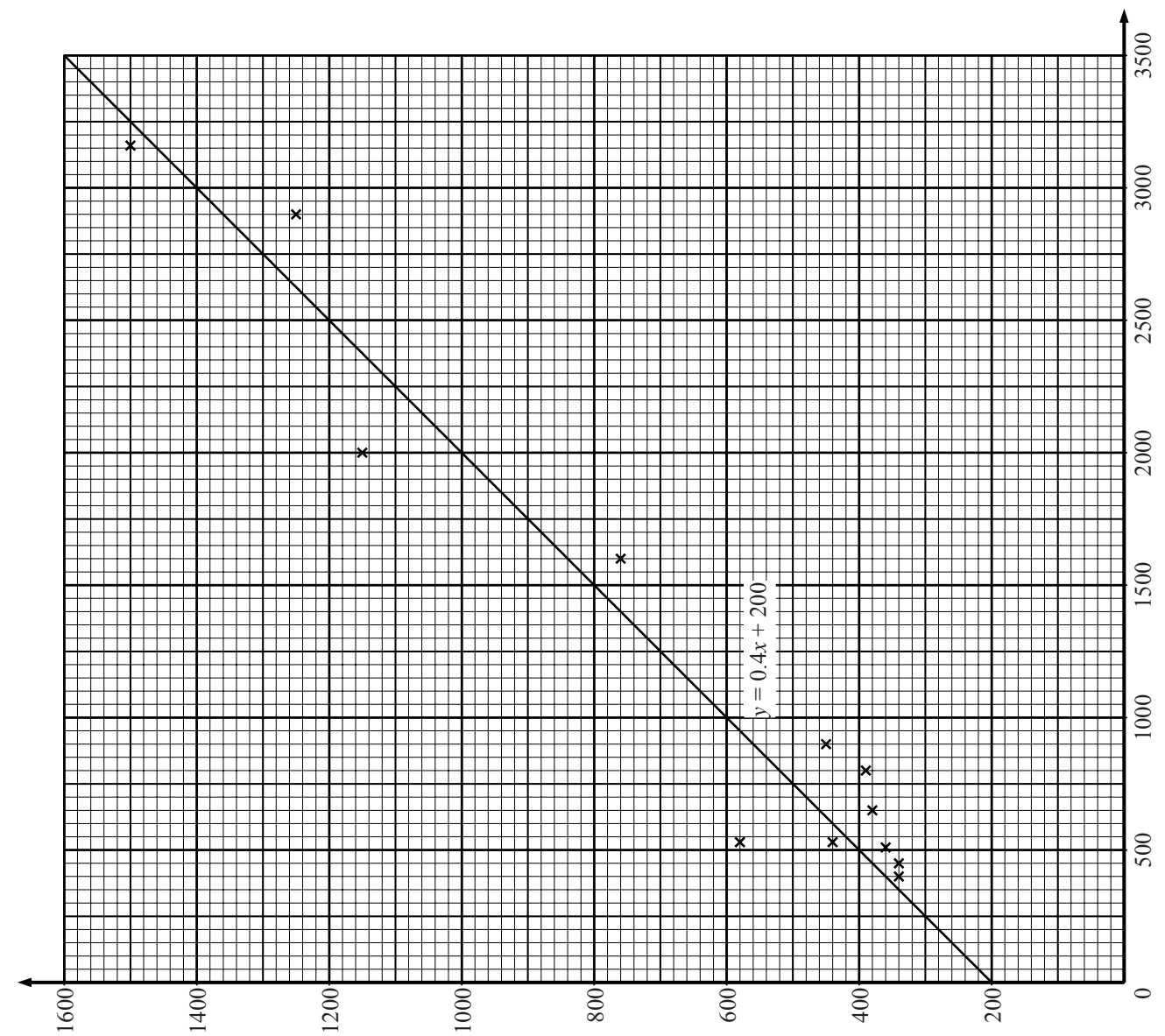
1MA0/2F				
Question	Working	Answer	Mark	Additional Guidance
21. FE (a)	Plots further data Draws line of best fit Reads off value from 2500	£ 1100— 1200	3	M1 plots further figures M1 draws line of best fit A1 1100 — 1200
(b)	Draws $y = 1000$ '2000' ÷ 48	42	2	M1 draws $y = 1000$ and divides by 48 A1 40 — 44
<b>Total for Question: 5 marks</b>				

11.



Scale 1 cm represents 1 m





21.

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