

Mark Scheme

Sample Assessment Material

GCSE

GCSE in Mathematics Specification A
Foundation Tier

Paper 1 (Non-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 1 Foundation Tier

1MA0/1F					
Question	Working	Answer	Mark	Additional Guidance	
1.		65	1	B1 cao	
(a)					
(b)	5 – 3.8	1.2	2	M1 5 – 3.8 A1 cao	
Total for Question: 3 marks					
2.	$44 - 8 = 36$ $36 + 19 = 55$ $47 + 3 = 53$ OR $44 + 19 - 8 = 55$ $47 + 6 = 53$ OR $47 - 44 = 3$ $3 + 8 = 11$ $19 - 11 - 6 = 2$	2 (with appropriate reason)	2	M1 Clear attempt to find the number of spaces available on the bus after the bus stops A1 reason for answer which must comment on the difference between 55 and 53	
Total for Question: 2 marks					

1MA0/1F				
Question	Working	Answer	Mark	Additional Guidance
3.				
(a)		(6, 7)	1	B1 cao
(b)		(3, 5.5)	2	M1 Clear attempt to find the mean of either x or y coordinates of P and Q A1 cao OR M1 identifies the midpoint of PQ on the diagram A1 cao SC B1 for exactly one coordinate correct
(c)		(6, 0)	2	M1 for B correctly placed on the x axis A1 for (6, 0)
Total for Question: 5 marks				
4.				
FE				
(a)		cylinder	1	B1 cao
(b)		9	1	B1 cao
(c)		D, E	1	B1 cao
(d)(i)		Net	5	B3 fully correct (B2 5 correct faces) (B1 a net of a cuboid)
(ii)		14 cm × 18 cm		B1, B1 ft on d(i)
Total for Question: 8 marks				
5.				
(a)		16 cm	1	B1 cao (units included)
(b)		48 cm ³	4	M1 3-D drawing or sketch M1 4 × 4 × 2 and 2 × 2 × 4 / 4 × 4 × 4 and 2 × 2 × 4 M1 adding or subtracting A1 cao (units included)
Total for Question: 5 marks				

1MA0/1F				
Question	Working	Answer	Mark	Additional Guidance
6. FE		Correct table WITH EITHER Bar chart OR Pictogram OR Pie Chart	6	B1 Table with at least 2 columns with car, lorry, van, motorbike and bus rows M1 tally column completed or headed frequency column with at least two entries correct A1 correct frequencies (7, 4, 5, 6, 2) WITH EITHER B1 labelled axes with a uniform scale M1 bars labelled all the same width A1 bars all correct (ft from a) OR B1 labelled pictogram M1 5 classes + key A1 all correct (ft from a) OR B1 circle with 5 sectors labelled M1 correct calculation of at least one angle A1 all sectors correct (ft from a)
(b)	25% of 24 = 6	Yes as 5 < 6	2	M1 finding 25% of 24 A1 Yes as 5 < 6, (ft from a)
(c)		Survey at different places Survey at different times Do a bigger survey	2	B2 2 or more reasons (B1 1 reason) Ignore irrelevant reasons
Total for Question: 10 marks				

1MA0/1F				
Question	Working	Answer	Mark	Additional Guidance
7. (a)		Correct diagram	1	B1 4 identical shapes to the previous patterns
(b)		60	2	M1 continues pattern 6, 12, 18, as far as the 10th A1 cao OR M1 indicates that the number of sticks is 6 times the pattern number A1 cao OR M1 doubles 30 sticks for pattern number 5 A1 cao
(c)	123 ÷ 6 leaves a remainder of 3, so 'no'	No + justification	2	M1 Attempts to divide 120 by 6 A1 'No' + comment on remainder OR M1 Starts at 6 and builds up to 120 and 126 A1 'No' + sight of 120 and 126
Total for Question: 5 marks				
8. (a)		C and D	1	B1 cao
(b)		B and E	1	B1 cao
(c)		4.5 cm ²	1	B1 cao
Total for Question: 3 marks				

1MA0/1F					
Question	Working	Answer	Mark	Additional Guidance	
9.		Correct reflection	1	B1 cao	
		Correct square	1	B1 cao	
	See pattern at end	Correct squares	1	B1 cao	
Total for Question: 3 marks					
10.		$6x$	1	B1 cao	
		$y \geq -2$	2	M1 attempt to isolate y A1 cao	
Total for Question: 3 marks					
11.	50 shirts at £12 each = £600 Selling Price for profit of 30% = $£12 \times 1.3 = £15.60$ 20 shirts at £15.60 = £312 Reduced selling price = $£15.60 \times 0.85 = £13.26$ 30 shirts at £13.26 = £397.80 $£397.80 + £312 > £600$	Yes, together with appropriately set out working which supports answer	8	B1 for price of 50 shirts M1 for $£12 \times 1.3$ A1 for £15.60 A1 for 20 shirts = £312 M1 for $£15.60 \times 0.85$ A1 for £13.26 A1 for 30 shirts = £397.80 C1 Yes stated together with a statement which supports the correct answer QWC: With clear working attributed correctly	
Total for Question: 8 marks					

1MA0/1F				
Question	Working	Answer	Mark	Additional Guidance
12.				
(a)		$(2, 6)(4, 4)$ $(6, 2)$	2	M1 lists as ordered pairs or in a table with at least 2 entries A1 all 3 correct entries
(b)		$\frac{6}{16}$	4	M1 lists the sample space (at least 4 pairs) A1 fully correct M1 identifies cases where Ali wins A1 cao
Total for Question: 6 marks				
13.				
FE				
(a)		2 correct combinations	2	B1 Single burger and regular cola oe B1 Regular fries and regular cola oe -1 for each extra incorrect
(b)	Best is Cost $3.49 + 1.70 = 5.19$ Change = $10.00 - 5.19$	£4.81	3	M1 2 correct individual costs found M1 sum and subtract from £10 A1 cao SC B2 5.24 (B1 $2 \times 1.70 + 0.99 + 0.85 = (5.24)$)
Total for Question: 5 marks				
14.				
FE				
(a)	$48 + 37 + 78 + 21 = 184$ $184 \times 40 = 7360$ $4 \times 12 = 48$ $73.60 + 48$	£121.60	4	M1 find the total miles M1 total miles $\times 40$ or $\times 0.4(0)$ M1 mileage expenses + 4×12 or + 5×12 A1 cao
(b)	$2000 \div 50 = 40$ $4000 \div 40 = 100$ OR $2000 \div 0.4 = 50000$ $50000 - 50 = 100$ OR $0.4 \times 50 = 20$ $2000 \div 20 = 100$	100	3	M1 for sight of 2000 , or 50, or 20000 M1 dep for an attempt to find cost per week or mileage per year A1 100 OR M1 sight of 2000, or 50 M1 dep 0.4×50 and $2000 \div '20'$ A1 100
Total for Question: 7 marks				

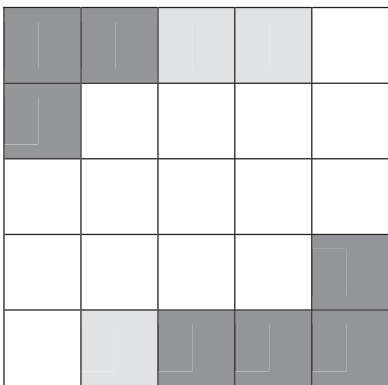
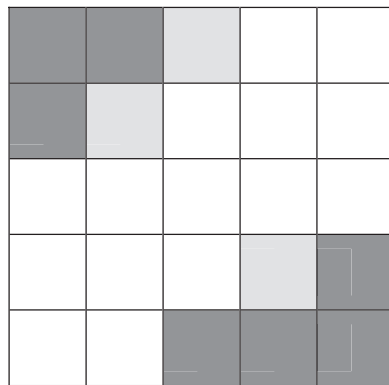
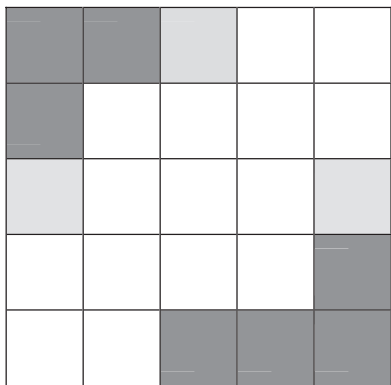
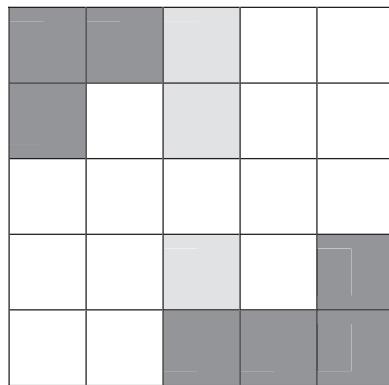
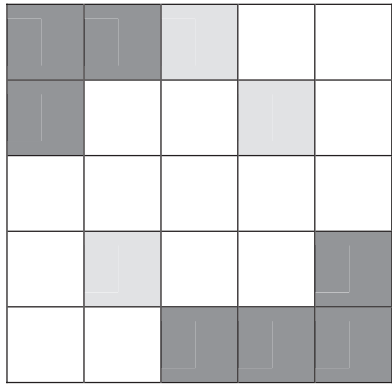
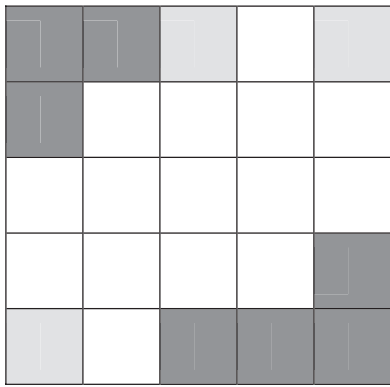
1MA0/1F	Additional Guidance		
Question	Working	Answer	Mark
15. QWC ii, iii	$\frac{1}{2} = \frac{4}{8}; \frac{1}{4} = \frac{2}{8}$ <p>So $\frac{3}{8}$ is half way</p> <p>OR</p> <p>use of 0.5 and 0.25 to get 0.375 and compare to 0.33</p> <p>OR</p> $\frac{1}{2} - \frac{1}{3} = \frac{1}{6} \text{ and } \frac{1}{3} - \frac{1}{4} = \frac{1}{12}$ <p>followed by conclusion</p> <p>OR</p> <p>use of 0.5 and 0.25 and differences of 0.5 – 0.33(3,...) and 0.33(3,...) – 0.25</p>	Coherent and well structured argument with appropriate reason	3
<p>M1 to change both fractions to equivalent fractions M1 (dep on at least one correct equivalent fraction) to find midpoint C1 conclusion following correct work by stating that $\frac{3}{8}$ is not equal to $\frac{1}{2}$</p> <p>OR</p> <p>QWC: Decision should be stated with supporting reason given</p> <p>M1 use of 0.5 and 0.25 M1 (dep on at least correct decimal one find midpoint) C1 conclusion following correct work and sight of 0.37(5) and 0.33(3..)</p> <p>QWC: Decision should be stated with supporting reason given</p> <p>OR</p> <p>M1 for working out differences M1 For a correct method of calculating differences of fractions using equivalent fractions C1 conclusion following from $\frac{1}{6}$ and $\frac{1}{12}$</p> <p>QWC: Decision should be stated with supporting reason given</p> <p>OR</p> <p>M1 for working out differences M1 for a correct method of calculating differences of fractions using equivalent fractions C1 conclusion following from $\frac{1}{6}$ and $\frac{1}{12}$</p> <p>QWC: Decision should be stated with supporting reason given</p> <p>OR</p> <p>M1 use of 0.5 and 0.25 M1 (dep on at least one correct decimal) for working out differences C1 for conclusion based on 0.17(or better) and 0.08(23...) QWC: Decision should be stated with supporting reason given</p>			
Total for Question: 3 marks			

1MA0/1F					Additional Guidance	
Question	Working	Answer	Mark			
16. (a)	$5p = 20$	4	2	M1 add 16 to both sides A1 cao		
(b)	$-4 - 5 = 5q - 2q$	-3	2	M1 for correct method isolate $\pm 3q$ A1 cao		
(c)	$6x - 3 - 10 - 6x =$	-13	2	M1 at least one expansion correct A1 cao		
					Total for Question: 6 marks	

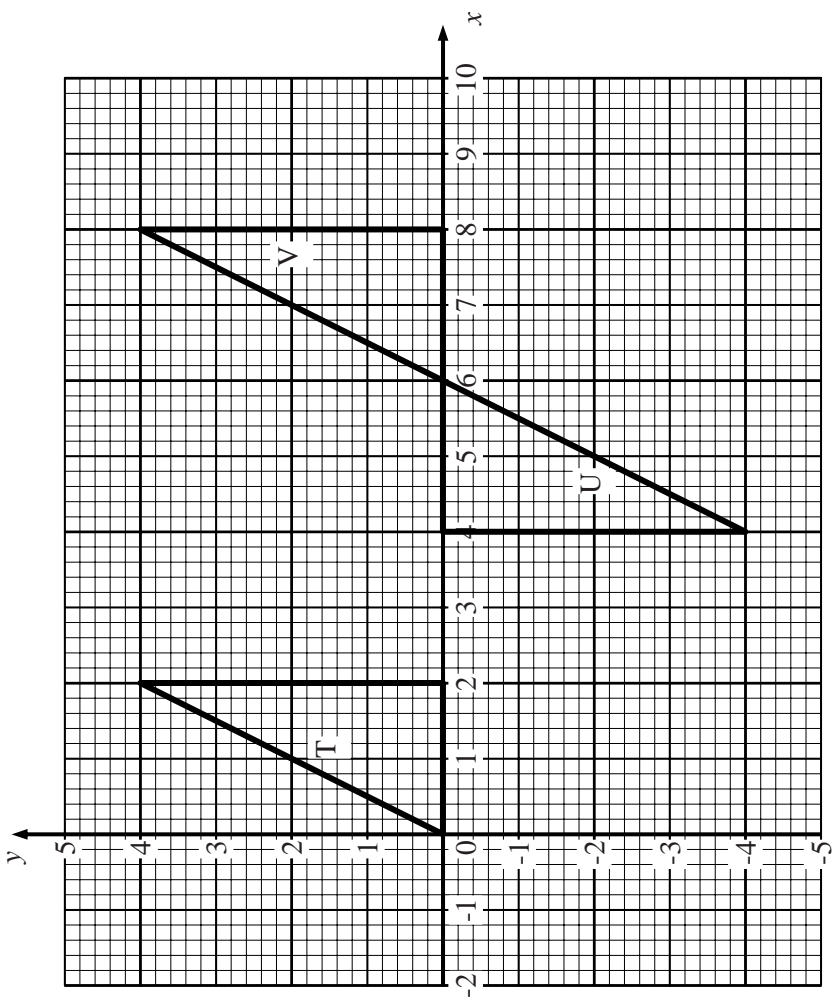
1MA0/1F				
Question	Working	Answer	Mark	Additional Guidance
17.	$x + 4x + \frac{1}{2} = 1$ $5x = \frac{1}{2}, \quad x = \frac{1}{10}$ <p>OR</p> <p>Choose a suitable number of balls (say 10) 5 will be red The other 5 need to be shared out in the ratio 1:4, hence 1 yellow and 4 blue</p>	$\frac{4}{10}$	3	<p>M1 $x + 4x + \frac{1}{2} = 1$</p> <p>A1 $x = \frac{1}{10}$</p> <p>A1 $\frac{4}{10}$ oe</p>
Total for Question: 3 marks				
18.	<p>Rotates shape about (3,0) by 180° to give U</p> <p>Rotates U about (6, 0) to give V</p> <p>(see graph at end)</p>	<p>Translation by</p> $\begin{pmatrix} 6 \\ 0 \end{pmatrix}$	3	<p>B3 Translation by $\begin{pmatrix} 6 \\ 0 \end{pmatrix}$</p> <p>(B2 translation by 6 to the right or just (B1 translation or move to the right 6) If no marks earned from a description then B1 U correctly placed B1 V correctly placed</p>
Total for Question: 3 marks				

1MA0/1F		Additional Guidance		
Question	Working	Answer	Mark	Additional Guidance
19.	<p>Number of prizes should buy</p> $\frac{3}{8} \times 1000 = 375$ <p>OR</p> <p>Each triangle should win $1000 \div 8$ times (=125) So $3 \times 125 = 375$</p>	(376) and justification that matches answer	3	<p>M1 estimate of probability</p> <p>A1 for answer $> \frac{3}{8}$ of 1000</p> <p>C1 for justification that matches answer Number of prizes between 376 and 500</p> <p>OR</p> <p>M1 $1000 \div 8$</p> <p>A1 for answer $> \frac{3}{8}$ of 1000</p> <p>C1 for justification that matches answer Number of prizes between 376 and 500</p>
Total for Question: 3 marks				
20.		$5(x - 2y)$	1	B1 cao
		$3p(q - 4p)$	2	<p>B2 $3p(q - 4p)$ (B1 correct partial factorisation, for example, $p(3q - 12p)$, $12p(\frac{1}{4}q - p)$, $p(aq + bp)$ where a and b are numbers</p>
Total for Question: 3 marks				

1MA0/1F			
Question	Working	Answer	Mark
21 FE	<p>Area of the room = $4 \times 8 + 4 \times 6 = 56$ Area of a tile = $0.5 \times 0.5 = 0.25$ Number of tiles = $56 \div 0.25 = 224$ Cost = 4×224</p> <p>OR</p> <p>No of tiles around room = $2 \times$ lengths of room = 8, 16, 16, 12 Total number of tiles = 8×16 + $8 \times 12 = 224$ Cost = 4×224</p>	£ 896	6
<p>Additional Guidance</p> <p>M1 for full method for finding the area of the room A1 at least one area correct B1 for area of tile = 0.25m^2 or 2500 cm^2 or 4 tiles = 1m^2 M1 for area of room \div area of a tile M1 for $4 \times$ number of tiles A1 cao</p> <p>OR</p> <p>M1 for doubling each length to show number of tiles for each side B1 for 8, 16, 16 and 12 M1 for a full method of finding the number of tiles ($12 \times 16 + 8 \times 4$) A1 for at least one 'section' correct M1 for $4 \times '224'$ A1 cao</p>		<p>Total for Question: 6 marks</p>	



9 (c)



18.

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