GCSE Mathematics (1MA1) – Foundation Tier Paper 2F

Summer 2022 student-friendly mark scheme

Please note that this mark scheme is not the one used by examiners for making scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn't show follow-through marks (marks that are awarded despite errors being made) or special cases.

It should also be noted that for many questions, there may be alternative methods of finding correct solutions that are not shown here – they will be covered in the formal mark scheme.

NOTES ON MARKING PRINCIPLES

Guidance on the use of codes within this mark scheme
M1 – method mark. This mark is generally given for an appropriate method in the context of the question. This mark is given for showing your working and may be awarded even if working is incorrect. P1 – process mark. This mark is generally given for setting up an appropriate process to find a solution in the context of the question. A1 – accuracy mark. This mark is generally given for a correct answer following correct working. B1 – working mark. This mark is usually given when working and the answer cannot easily be separated. C1 – communication mark. This mark is given for explaining your answer or giving a conclusion in context supported by your working. Some questions require all working to be shown; in such questions, no marks will be given for an answer with no working (even if it is a correct answer).

Question 1 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	1480	B1	This mark is given for the correct answer only

Question 2 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{7}{10}$	B1	This mark is given for the correct answer only

Question 3 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	3	B1	This mark is given for the correct answer only

Question 4 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	For example: 125 or 250	B1	This mark is given for a correct 3-digit answer ending in 0 or 5

Question 5 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	40	B1	This mark is given for the correct answer only

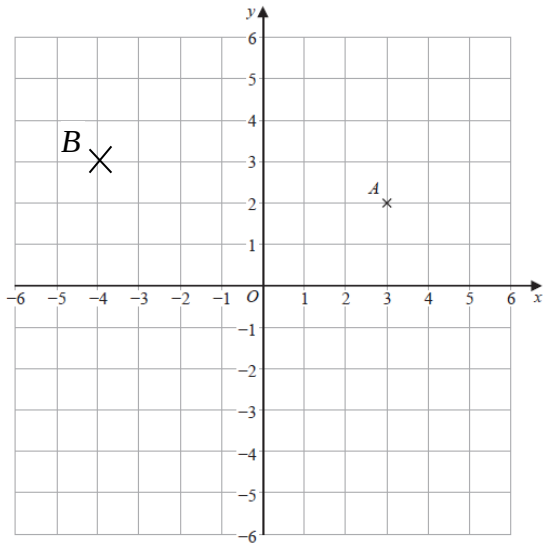
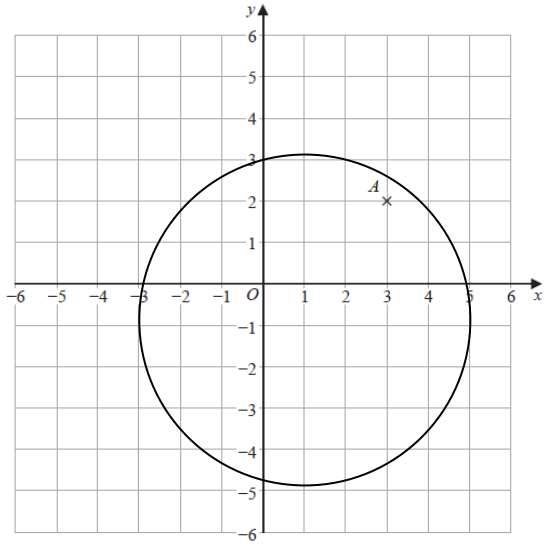
Question 6 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	–11, –7, –2, 3, 8, 10	B1	This mark is given for the correct answer (accept numbers in reverse order)

Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Hexagon	B1	This mark is given for the correct answer only
(b)	*AF*	B1	This mark is given for the correct answer only (accept *FA*)
(c)	*AB* or *EF*	B1	This mark is given for the correct answer only (accept *BA* or *EF*)

Question 8 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	(3, 2)	B1	This mark is given for the correct answer only
(b)		B1	This mark is given for the correct answer only
(c)		B2	These marks are given for a circle drawn with centre (1, –1) (B1 is given for a circle drawn with radius 4 cm and any centre **or** for any circle drawn with centre (1, –1)

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	23	B1	This mark is given for the correct answer only
(b)	10 : 56	M1	This mark is given for one or both of 10 or 56 identified
		A1	This mark is given for the correct answer only (or equivalent, e.g. 5 : 28)

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	1428 – 150 = 1278	P1	This mark is given for a process to find the cost of six monthly payments
	1278 ÷ 6	A1	This mark is given for a process to find the cost of one monthly payment
	213	A1	This mark is given for the correct answer only

Question 11(Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	180 – 116 – 25 = 39	M1	This mark is given for a method to find the angle *ACB*
	$x = 39$	A1	This mark is given for the correct answer only
	Angles in a triangle ad up to 180 **and** Vertically opposite angles are equal	C1	This mark is given for a two correct reasons stated

Question 12 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$(28 \div 7) + 5 = 9$	B1	This mark is given for the correct answer only
(b)	$154 \div 11 = 14$	P1	This mark is given for a process to complete the number machine
	$8 + 14 = 6$	A1	This mark is given for the correct answer only

Question 13 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	<table><tr><th></th><th>Single</th><th>Double</th><th>King size</th><th>Total</th></tr><tr><td>With mattress</td><td></td><td></td><td>67</td><td></td></tr><tr><td>Without mattress</td><td>17</td><td></td><td></td><td>59</td></tr><tr><td>Total</td><td></td><td>45</td><td>83</td><td>198</td></tr></table>	C1	This mark is given for placing at least four pieces of given data in the two-way table
	<table><tr><th></th><th>Single</th><th>Double</th><th>King size</th><th>Total</th></tr><tr><td>With mattress</td><td></td><td></td><td>67</td><td>139</td></tr><tr><td>Without mattress</td><td>17</td><td></td><td>16</td><td>59</td></tr><tr><td>Total</td><td>70</td><td>45</td><td>83</td><td>198</td></tr></table>	C1	This mark is given for finding and correctly placing at least one unknown piece of given data in the two-way table (e.g. 16 or 139 or 70)
	<table><tr><th></th><th>Single</th><th>Double</th><th>King size</th><th>Total</th></tr><tr><td>With mattress</td><td>53</td><td>19</td><td>67</td><td>139</td></tr><tr><td>Without mattress</td><td>17</td><td>26</td><td>16</td><td>59</td></tr><tr><td>Total</td><td>70</td><td>45</td><td>83</td><td>198</td></tr></table>	C1	This mark is given for a fully correct table

Question 14 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(i)	>	B1	This mark is given for the correct answer only
(ii)	=	B1	This mark is given for the correct answer only

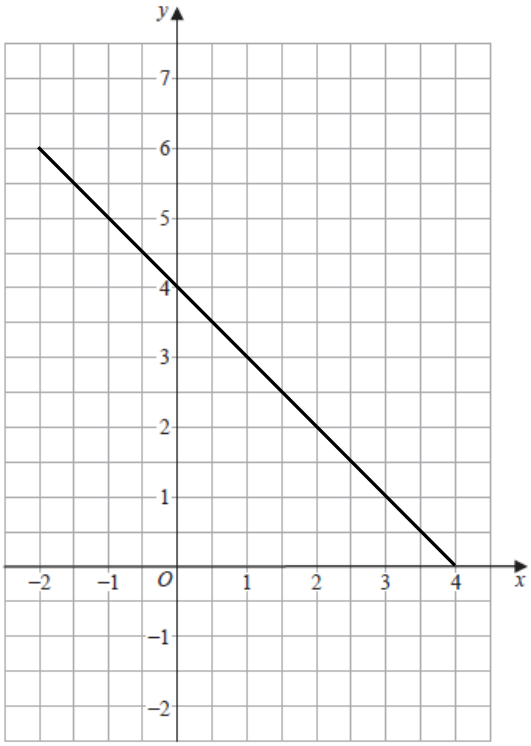
Question 15 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$(0 \times 3) + (1 \times 57) + (2 \times 84) + (3 \times 75) + (4 \times 81)$ $= 0 + 57 + 168 + 225 + 324$	M1	This mark is given for a method to find the total number of social media accounts
	774	A1	This mark is given for the correct answer only
(b)	$300 \div 2 = 150$ $3 + 57 + 84 = 144$ $3 + 57 + 84 + 75 = 219$	M1	This mark is given for a method to find the median number of social media accounts
	3	A1	This mark is given for the correct answer only

Question 16 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$62 \div 12.4 = 5$	P1	This mark is given for a process to find the scale factor
	5×9.4	P1	This mark is given for a process to find the width of the building
	47	A1	This mark is given for the correct answer only

Question 17 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		B3	This mark is given for a correct line between $x = -2$ and $x = 4$ (B2 is given for a correct straight line segment through at least 3 of (–2, 6), (–1, 5), (0, 4), (1, 3), (2, 2) (3, 1) (4, 0) **or** all points plotted but not joined **or** a line with negative gradient drawn through (0, 4)) (B1 is given for at least two points stated or plotted **or** a line with negative gradient drawn through (0, 4) **or** a line with gradient –1)

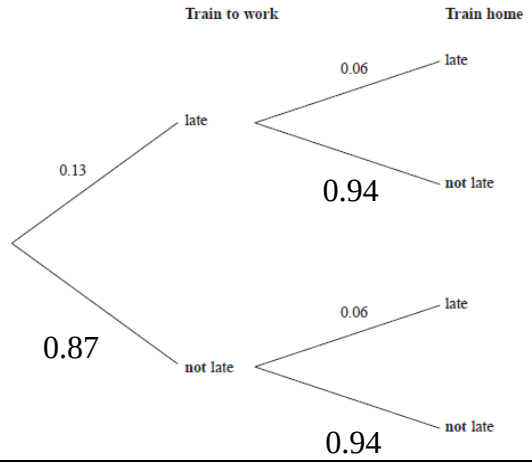
Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$25.3 \times 60 = 1518$ minutes	P1	This mark is given for a process to convert the number of hours to minutes
	$1518 \div 115$	P1	This mark is given for a process to find the mean length of time for each missed appointment
	13.2	A1	This mark is given for the correct answer only

Question 19 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3000 \div 150 = 20$	P1	This mark is given for a process to find out how many bags can be filled
	$17.60 \div 20 = 0.88$	P1	This mark is given for a process to find the cost of a small bag
	$0.88 \times 0.35 = 0.308$	P1	This mark is given for a process to work out 35% of the cost of a bag
	$0.88 + 0.308 = 1.188$	P1	This mark is given for a process to work out the lowest price to achieve a 35% profit per bag
	1.19	A1	This mark is given for the correct answer only

Question 20 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)		B2	These marks are given for three correct probabilities 0.87, 094 and 0.94 added to the tree diagram (B1 is given for 0.87 or 0.94 correctly placed)
(b)	0.13×0.06	M1	This mark is given for a method to work out the probability
	0.0078	A1	This mark is given for the correct answer only

Question 21 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$(x^3)^5 = x^{(3 \times 5)} = x^{15}$	B1	This mark is given for the correct answer only
(b)	$4x + 12 + 28 – 14x$	M1	This mark is given for a method to expand at least one bracket
	$40 – 10x$	A1	This mark is given for the correct answer only
(c)	$3(5x^3 + x^2y)$ **or** $3x(5x^2 + xy)$ **or** $x^2(15x + 3y)$	M1	This mark is given for a method to eliminate at least one factor
	$3x^2(5x + y)$	A1	This mark is given for the correct answer only

Question 22 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Translation $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$	B1	This mark is given for translation stated
		B1	This mark is given for the vector $\begin{pmatrix} -5 \\ 6 \end{pmatrix}$

Question 23 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$89.5 \leq$ length < 90.5	B1	This mark is given for 89.5 shown in the correct position
		B1	This mark is given for 90.5 shown in the correct position

Question 24 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$700 \times 2000 = 1\,400\,000$	P1	This mark is given for a process to find the area available at Festival B
	Festival A: $80\,000 \div 425 = 188.23\ldots$ Festival B: $1\,400\,000 \div = 6750 = 207.40\ldots$	P1	This mark is given a method to find the area available per person at (at least) one Festival
	$207.40\ldots - 188.23\ldots = 19.17\ldots$	P1	This mark is given for finding the difference in area per person
	19 (to the nearest whole number)	A1	This mark is given for the correct answer only
(b)	For example: 300 cm^2 is 0.1 m × 0.3 m = 0.03 m^2 3 m^2 is 100 cm × 300 cm = 30 000 cm^2	C1	This mark is given for a valid statement relating scale factor to area

Question 25 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$4 - -3 = 7$ $9 - 1 = 8$	P1	This mark is given for a process to use coordinates to find the translation of *L* to *M*
	$7 \div 2 = 3.5$ $8 \div 2 = 4$	P1	This mark is given for a process to use the ratio 2 : 3
	$5 \times 3.5 + -3$ $5 \times 4 + 1$	P1	This mark is given for a process to use coordinates to find the translation of *L* to *N*
	(14.5, 21)	A1	This mark is given for the correct answer only

Question 26 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$679 \times 0.96 = 651.84$	M1	This mark is given for a method to find the decrease in value after one year (given also if $679 \times (0.96)^3$ seen)
	$651.84 \times 0.96 \times 0.96$ **or** $679 \times (0.96)^3$	M1	This mark is given for a method to find the decrease in value after three years
	600.74	A1	This mark is given for the correct answer only (accept 600.73)

Question 27 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$18 \div 4.5 = 4$ **or** $8 \times 4.5 = 36$ (18 litres = 4 gallons **or** 8 gallons = 36 litres)	P1	This mark is given for a process to convert between litres and gallons
	$40.8 \div 0.85 = 48$ **or** $27 \times 0.85 = 22.95$ (£40.80 = €48 or €27 = £22.95)	P1	This mark is given for a process to convert between euros and pounds
	Sam pays £22.95 for 4 gallons Leo pays £20.40 for 4 gallons **or** Sam pays €27 for 18 litres Leo pays €24 for 18 litres	P1	This mark is given for a process to make a comparison between petrol prices
	For example: Sam is wrong, petrol is cheaper in Wales	C1	This mark is given for the valid conclusion supported by correct working

Question 28 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$10x + 4y = 54$ $6x + 4y = 28$ $4x = 26$ $(x = 6.5)$	M1	This mark is given for a method to eliminate one variable
	$(5 \times 6.5) + 2y = 27$ $32.5 - 27 = -2y$ $y = -\frac{5.5}{2}$	M1	This mark is given for substituting a found value into one of the equations
	$x = 6.5$, $y = -2.75$	A1	This mark is given for the correct answer only (or equivalent)