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

November 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
	–7, –2, –1, 0, 7	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
	$\dfrac{37}{100}$	B1	This mark is given for a correct answer only

Question 3 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	13	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
	530	B1	This mark is given for the correct answer only

Question 5 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	3476	B1	This mark is given for the correct answer only

Question 6 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	4.5 cm	B1	This mark is given for an answer in the range 4.3 to 4.7 cm
(b)	110	B1	This mark is given for an answer in the range 108 to 112

Question 7 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$12845 - 12468 = 377$	P1	This mark is given for a process to find the number of miles for the journey
	$377 \times 13 = 4901$	P1	This mark is given for a process to find the cost of the petrol
	$4901 \div 100$	B1	This mark is given for a conversion from pence to pounds
	49.01	A1	This mark is given for the correct answer only

Question 8 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	45×7	M1	This mark is given for a method to find the cost of hiring a van for 7 days
	315	A1	This mark is given for the correct answer only

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		M1	This mark is given for days labelled or a linear scale
		M1	This mark is given for correct bars showing information for at least 3 days
		A1	This mark is given for a fully correct bar chart including labelled y axis (Frequency or Total)

Question 10 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	08 09 – 07 20	M1	This mark is given for a method to find the number of minutes between 07 20 and 08 09
	49	A1	This mark is given for the correct answer only
(b)	08 00 + 7 = 08 07 Catches the 08 09 bus to Bolton which arrives at 08 58	P1	This mark is given for a process to find the time of arrival in Bolton
	08 58 + 15 = 09 13	P1	This mark is given for a process to find the time of arrival from the bus stop in Bolton
	Yes, Alison will arrive by 09 20	C1	This mark is given for a valid answer supported by correct working

Question 11(Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	214 – 14 = 200	P1	This mark is given for a process to find the number of children
	200 × 0.35 =	P1	This mark is given for a process to find the number of children wearing a hat
	70	P1	This mark is given for a finding the number of children wearing a hat
	200 – 70 = 130	A1	This mark is given for the correct answer only

Question 12 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$132 \div 8 \times 5$	M1	This mark is given for a method to find a solution
	82.5	A1	This mark is given for the correct answer only
(b)	For example: $\dfrac{3}{8} = \dfrac{24}{64}$, $\dfrac{9}{32} = \dfrac{18}{64}$, $\dfrac{1}{4} = \dfrac{16}{64}$, $\dfrac{21}{64}$	M1	This mark is given for a method to represent the fractions with a common denominator
	$\dfrac{1}{4}$, $\dfrac{9}{32}$, $\dfrac{21}{64}$, $\dfrac{3}{8}$	A1	This mark is given for the correct answer only

Question 13 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	Offer 1 = 6 pints for £1.50	P1	This mark is given for a process to find the price of milk from offer 1
	Offer 2 = 8 pints for £1.92	P1	This mark is given for a process to find the price of milk from offer 2
	Offer 1: £1.50 ÷ 6 = 25p per pint Offer 2: £1.92 ÷ 8 = 24p per pint	P1	This mark is given for a process to find the price per pint for each offer
	Offer 2 (4 pints) gives the better value for money	A1	This mark is given for a valid answer supported by correct working

Question 14 (Total 7 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$7c + 6d$	M1	This mark is given for either $7c$ or $6d$ seen
		A1	This mark is given for the correct answer only
(b)	$10m - 30 = 40$	M1	This mark is given for a method to expand the left-hand side of the equation
	$10m = 70$	M1	This mark is given for forming an equation in terms on m
	$m = 7$	A1	This mark is given for the correct answer only
(c)	$3x + 2y$	M1	This mark is given for either $3x$ or $2y$ seen
		A1	This mark is given for the correct answer only

Question 15 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	7 | 1 1 4 5 7 8 | 2 4 5 6 7 8 9 9 | 1 4 7 8 10 | 3 Key: $7\mid 1 = 71$	B2	These marks are given for a fully correct ordered diagram (B1 is given for a diagram with at most one error or omission)
		B1	This mark is given for a correct key
(b)	For example: 9th number or 4th number on second line	M1	This mark is given for '6' identified on the '8' line
	86	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
	$4 \times 12 = 48$	P1	This mark is given for a process to find the number of 'pipe hours' to fill the lake
	$\frac{1}{4}$ $(48 \div 6)$	P1	This mark is given for a process to find the number of 'pipe hours' taken by 6 pipes to fill a quarter of the lake
	2	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
	$(155 \times 8) + (165 \times 14) + (175 \times 24) + (185 \times 30) + (195 \times 4)$ $= 1240 + 2310 + 4200 + 5550 + 780$ $= 14080$	M1	This mark is given for a method to find height × frequency
	$14080 \div 80$	M1	This mark is given for a method to find an estimate for the mean height
	176	A1	This mark is given for the correct answer only

Question 18 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	(2, 1)	B1	This mark is given for the correct answer only
(b)	For example: As the amount of rainfall decreases, the number of hours of sunshine increases	C1	This mark is given for a valid description of the relationship
(c)		M1	This mark is given for a suitable line of best fit drawn
	3.5	A1	This mark is given for an answer in the range 3 to 4

Question 19 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		B2	These marks are given for a fully correct elevation 5 squares high and 3 squares wide

Question 20 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	$6n + 1$	B2	These marks are given for a fully correct answer (B1 is given for $6n + c$, where c is an integer $\neq 1$ or is missing)
(b)	$8 - 6n = -58$ $-6n = -66$ $-n = -11$ (or $n = 11$)	M1	This mark is given for a method to find whether or not n is an integer
	Yes, it is the 11th term	A1	This mark is given for valid explanation supported by correct working

Question 21 (Total 5 marks)

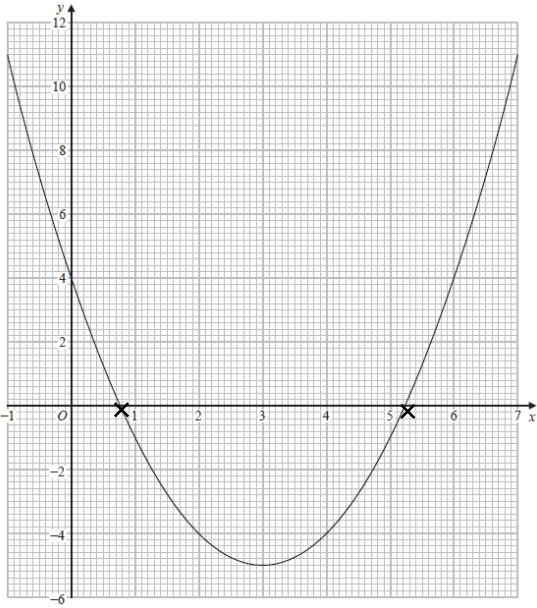| Part	Working or answer an examiner might expect to see	Mark	Notes
	$ABCO$: $11 \times 7 = 77$ $DEFO$: $9 \times 7 = 63$ CDO: $\frac{1}{2} \times 11 \times 9 = 49.5$ AFO: $\frac{1}{4} \times \pi \times 7^2 = 38.4845\ldots$	P1	This mark is given for a process to find at least three of the four areas
	$77 + 63 + 49.5 + 38.4845\ldots = 227.9845\ldots$	P1	This mark is given for a process to find the total area of the garden
	$227.9845\ldots \div 14 = 16.2846\ldots$	P1	This mark is given for a process to find out the number of bags of grass seed needed
	17×10.95	M1	This mark is given for a process to find out the cost of the bags of grass seed needed (the number of bags must be an integer)
	186.15	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
	$14.5 \times \cos 53°$	M1	This mark is given for a method to find the length x
	8.73	A1	This mark is given for a correct answer to three significant figures

Question 23 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$7000 \times 1.03 = 7210$	M1	This mark is given for a method to find the value of the investment after one year
	7210×1.015	M1	This mark is given for a method to find the value of the investment after two years
	7318.15	A1	This mark is given for the correct answer only

Question 24 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	4	B1	This mark is given for the correct answer only
(b)	(3, –5)	B1	This mark is given for the correct answer only
(c)		M1	This mark is given for a method to mark the intercepts with the x-axis on the graph
	5.2, 0.8	A1	This mark is given for correct answers in the ranges 5.1 to 5.3 and 0.7 to 0.9

Question 25 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\dfrac{1}{0.8} = 1.25$	B1	This mark is given for the correct answer only
(b)	$4650 \le x \le 4750$	B1	This mark is given for 4650 in the correct position
		B1	This mark is given for 4750 in the correct position

Question 26 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\dfrac{165\,680}{1.09}$	M1	This mark is given for a method to find the population in 2018
	$152\,000$	A1	This mark is given for the correct answer only