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

Mock Set 3 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
(a)	−12, −8, 2, 5, 10	B1	This mark is given for the correct answer only
(b)	1.073, 1.307, 1.37, 1.703	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
	$\dfrac{27}{100}$	B1	This mark is given for the answer shown (or an equivalent fraction)
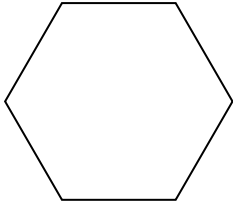
Question 3 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\dfrac{9}{100}$	B1	This mark is given for the answer shown (or an equivalent fraction)

Question 4 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	2550	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
		B1	This mark is given for a six-sided polygon drawn (which need not be regular)

Question 6 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(-4 + 10) \div 2$	M1	This mark is given for a method to find a halfway number, or for a number line with evidence of finding halfway value
	3	A1	This mark is given for the correct answer only

Question 7 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	3.89×5 or $(4 \times 5) - (0.11 \times 5)$	M1	This mark is given for a method to carry out the multiplication, or for the digits 1925 seen.
	(£) 19.25	A1	This mark is given for the correct answer only

Question 8 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	7 cm	M1	This mark is given for measuring distance within the range 6.8 to 7.2 cm
	$7 \times 5 = 35$	A1	This mark is given for an answer in the range 34 to 36
(b)	$22 \div 5 = 4.4$	M1	This mark is given for a method to use the scale to equate 22 km to cm or for a point plotted due South of B (within a range of $\pm 2°$)
		A1	This mark is given for a cross marked in the correct position on the map

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$1.60 \times 2 = 3.20$ or $2.25 + 1.85 + 3.30 = 7.40$	P1	This mark is given for a start to the process to work out the sum of costs of articles to buy
	$(1.60 \times 2) + 2.25 + 1.85 + 3.30 = 10.60$	P1	This mark is given for a complete process to work out the sum of costs of articles to buy
	Jack does not have enough money to pay the bill – he is 60p short	C1	This mark is given for a correct conclusion with supporting figures

Question 10 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)(i)	$\dfrac{4}{9}$	B1	This mark is given for the answer shown (or an equivalent fraction)
(a)(ii)	0	B1	This mark is given for the correct answer only
(b)	P1 P2 P3 P4 P5 P6 Y1 Y2 Y3 Y4 Y5 Y6 B1 B2 B3 B4 B5 B6	B2	These marks are given for a complete list of 18 outcomes with no repeats. (B1 is given for at least 9 correct outcomes with no more than one incorrect, repeats accepted)

Question 11 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	6	B1	This mark is given for the correct answer only
(b)	8	B1	This mark is given for the correct answer only

Question 12 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	40×300	M1	This mark is given for approximations of 40 or 300 in a product
	12 000	A1	This mark is given for accurate answer
(b)	An overestimate since both estimates in the calculation are greater than the exact values	C1	This mark is given for a correct conclusion with a reason given

Question 13 (Total 6 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)		C1	This mark is given for a key or suitable labels to identify boys and girls
		C1	This mark is given for a diagram or chart set up for comparison
		C1	This mark is given for correct heights for at least 4 bars (dependent on the linear scale chosen)
		C1	This mark is given for a fully correct diagram
(b)	$\dfrac{20}{a}$, where $a > 20$ or $\dfrac{b}{24}$, where $0 < b < 24$ or ft their diagram	M1	This mark is given for a correct numerator or denominator when finding the probability
	$\dfrac{20}{24}$	A1	This mark is given for the answer shown (or an equivalent fraction)

Question 14 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	172 34 ×	M1	This mark is given for a complete method with relative place value correct (addition not necessary)
	688 5160	M1	This mark is given for the addition of all appropriate elements
	5848	A1	This mark is given for the correct answer only

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$40 + 50 + 60 \ (= 150)$ or $360 - 40 - 50 - 60 \ (= 210)$	M1	This mark is given for a method o find the number of white golf balls
	$1 - \dfrac{150}{360} = \dfrac{210}{360}$ or $\dfrac{210}{360}$	M1	This mark is given for a method to find an expression for the probability
	$\dfrac{7}{12}$	A1	This mark is given for the answer shown (or an equivalent fraction)

Question 16 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	incorrect key; units should be years missing entry (of 29) incorrect order in the "4" leaf	C2	These marks are given for any two error found amongst the three which appear on the diagram (C1 is given for one error found)

Question 17 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	 $x = -1$	B2	These marks are given for a fully correct reflection (B1 is given for either identifying the line $x = -1$ or a correct reflection in a different vertical line)
(b)	$y = x$	B1	This mark is given for the answer shown or an equivalent equation

Question 18 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$100 - 80 = 20$ or $180 \times \dfrac{80}{100} = 144$	P1	This mark is given for a start of a process to find the total cost for the students
	$180 \times \dfrac{20}{100} = 36$ or $180 - 144 = 36$	P1	This mark is given for a complete process to find the total cost for he students
	$36 \div 1.50$	P1	This mark is given for a process to find number of students
	24	A1	This mark is given for the correct answer only

Question 19 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	(12×1.5) by $(8 \times 1.5) = 18$ by 12	P1	This mark is given for a process to find the dimensions of an enlarged photo
	$(40 - 2 - 2)$ by $(26 - 2 - 2) = 36$ by 22	P1	This mark is given for a process to find inside dimensions of the frame
	$18 \times 2 \; (= 36)$ or "12" $\times 2 \; (= 24)$ or $36 \times 22 = 792$ and 4 photos, $4 \times 18 \times 12 = 864$	P1	This mark is given for a process to consider one dimension total of the 4 photos, or for a process to find the area of the frame
	The photos cannot be placed without overlap	C1	This mark is given for a correct conclusion from accurate figures

Question 20 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	$3^5 \times 3^4 = 3^{5+4} \; (= 3^9)$ or $3^5 \div 3^2 = 3^{5-2} \; (= 3^3)$ or $3^4 \div 3^2 = 3^{4-2} \; (= 3^2)$	M1	This mark is given for a first step using a rule of indices
	3^7	A1	This mark is given for the correct answer only
(b)	1	B1	This mark is given for the correct answer only
(c)	$\dfrac{1}{9}$	B1	This mark is given for the answer shown (or for $0.111\ldots$)

Question 21 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$32 \times \dfrac{3}{4} = 24$	P1	This mark is given for a process to find the height of the surface of the water or
	$50 \times 32 \times 20 = 32\,000$		to find the volume of the tank
	$50 \times 24 \times 20 = 24\,000$ or $32\,000 \times \dfrac{3}{4} = 24\,000$	P1	This mark is given for a process to find the volume of the water and sand or
	$24 \div (5 + 1) \times 5 = 4 \times 5 = 20$		for a process to divide the height in the ratio 5:1
	$24\,000 \div (5 + 1) \times 5 = 4000 \times 5 = 20\,000$	P1	This mark is given for a process to divide the volume in the ratio 5:1
	$20 \times 50 \times 20 = 20\,000$		or for a process to find the volume of the water
	$20\,000 \div 1000$	P1	This mark is given for a process to convert to litres
	20	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
	£200 reduced by 50% = £100 £100 increased by 50% = £150	C1	This mark is given for scale factors of 0.5 for decrease and 1.5 for increase seen
	Betty is not correct since $x \times 0.5 \times 1.5 \neq x$	C1	This mark is given for an explanation supported by correct working

Question 23 (Total 4 marks)

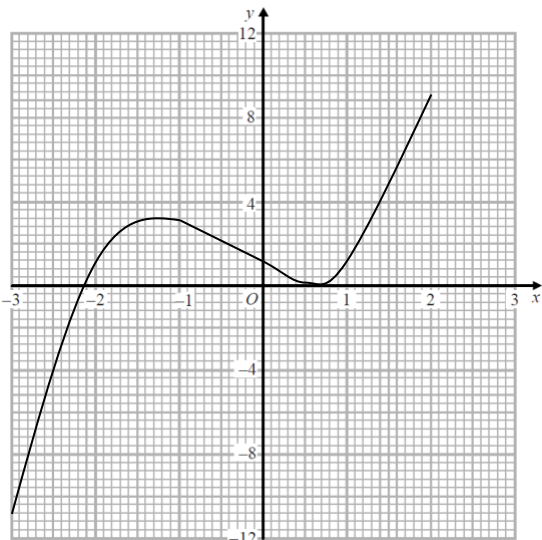| Part	Working or answer an examiner might expect to see	Mark	Notes
	$3x + 10 = 5(x - 10)$	P1	This mark is given for equating opposite angles to give an equation in x
	$5x - 3x = 10 + 50$ $2x = 60$ $x = 30$	P1	This mark is given for expanding the bracket and rearranging terms to find x
	$3 \times 30 + 10 = 100$ $5(30 - 10) = 100$	P1	This mark is given for substituting the value of x into one of the angles
	$360 - 100 - 100 - 110 = 50$	A1	This mark is given for the correct answer only

Question 24 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$6x - 4y = -10$ $2x - 4y = 2$ $4x \quad = -12$ or $6x - 4y = -10$ $6x - 12y = 6$ $\quad 8y = -16$	M1	This mark is given for a method to eliminate either x or y
	$x = -3$ $-6 - 4y = 2$ or $y = -2$ $6x + 8 = -10$	M1	This mark is given for correct substitution of the value of x or y or for a method to eliminate the other unknown
	$x = -3$, $y = -2$	A1	This mark is given for the correct answer only

Question 25 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	interior angle: $(8 - 2) \times 180 \div 8$ or exterior angle: $360 \div 8$	M1	This mark is given for a method to find the size of an interior angle or an exterior angle
	interior angle = 135 or exterior angle = 45	A1	This mark is given for finding the size of an interior angle or an exterior angle
	$CDA = \dfrac{(360 - 135 \times 2)}{2} = 45$	M1	This mark is given for method to find size of angle CDA
	$CDJ = 180 - 45 = 135$	C1	This mark is given for a correct conclusion from correct working

Question 26 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	**–11**, 1, 3, **1**, 1, **9**	B2	This mark is given for a fully correct table (B1 is given for two correct new values found)
(b)		M1	This mark is given for at least 5 correctly plotted points joined
		A1	This mark is given for a fully correct graph

Question 27 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	2 7 12 17 22 5 5 5 5 nth term of sequence is $5n - 3$	B1	This mark is given for a process to find the nth term of the given sequence
	$5n - 3 = 4n + 15$ $(5n - 4n) = 15 + 3$	P1	This mark is given for setting up an equation in n to be solved
	$n = 18$	A1	This mark is given for the correct answer only

Question 27 (Total 3 marks) alternative

Part	Working or answer an examiner might expect to see	Mark	Notes
	2, 7, 12, 17, 22, 27 and 19, 23, 27	B1	This mark is given for listing terms in each sequence up to a common term
	2, 7, 12, 17, 22, 27, 32, 37, 42, 47, 52, 57, 62, 67, 72, 77, 82, **87** 19, 23, 27, 31, 35, 39, 43, 47, 51, 55, 59, 63, 67, 71, 75, 79, 83, **87**	P1	This mark is given for a process to continue listing up to a common term after the same number of terms in each sequence
	$n = 18$	A1	This mark is given for the correct answer only