

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

November 2018 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
	40	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
	For example 9, 25, 49, 81...	B1	This mark is given for a correct odd square number

Question 3 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$4560 \div 1000 = 4.56$	B1	This mark is given for the correct answer only
(b)	$7.3 \times 1000 = 7300$	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
	$4 \times 4 \times 4 = 64$ Cube root of 64 = 4	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
	$\frac{31}{100}$	B1	This mark is given for the correct answer (or an equivalent fraction)

Question 6 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example, 0.75, 0.7142..., 0.76, 0.73333....	M1	This mark is given for at least three fractions in order or fractions converted into decimals
	$\frac{5}{7}$, $\frac{11}{15}$, $\frac{3}{4}$, $\frac{19}{25}$	A1	This mark is given for a correct answer only

Question 7 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$4m$	B1	This mark is given for the correct answer only
(b)	$8np$	B1	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
	14×18.8	M1	This mark is given for a method to find the real distance
	263.2	A1	This mark is given for the correct answer only

Question 9 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$3 + 4 = 7$, $6 + 4 = 10$, $9 + 4 = 13$, $12 + 4 = 16$, $15 + 4 = 19$, $18 + 4 = 22$,... or $(21 - 4) \div 3$ is not a whole number n	B2	This mark is given for a full explanation (B1 is given for a partial explanation)
(b)	7, 11 or 8, 16	B1	This mark is given for two correct numbers
	Add one more each time or Double the number each time	C1	This mark is given for a correct explanation

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$8 \times 5 - 2 = 38$	B1	This mark is given for the correct answer only
(b)	$\text{input} \times 5 - 2 = 28$ $(28 + 2) \div 5$	M1	This mark is given for a method to find the input
	6	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
	$\frac{30}{100} \times 80 = 24$	M1	This mark is given for a method to calculate Adam's bonus
	$28 - 24$	M1	This mark is given for a method to find the difference between Adam's and Katy's bonus
	4	A1	This mark is given for the correct answer only

Question 12 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$49 - 20 = 29$	P1	This mark is given for $\frac{29}{a}$ where $a > 29$ or $\frac{b}{49}$ where $b < 49$
	$\frac{29}{49}$	A1	This mark is given for the correct answer (or equivalent fraction)

Question 13 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\sqrt{81} = 9$	P1	This mark is given to find the length of the side of the square
	$9 \times 4 = 36$	A1	This mark is given for the correct answer only
(b)	$\frac{1}{2} \times 16 \times 9 = 72$	M1	This mark is given for finding the area of the triangle
	$72 \times 5 = 360$	M1	This mark is given for finding the area of the parallelogram
	$h = 360 \div 30$ $= 12$	A1	This mark is given for the correct answer only

Question 14 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	No; the probability is the same for each number.	C1	This mark is given for a correct statement
(b)	No; the probability of getting two sixes is $\frac{1}{6} \times \frac{1}{6}$, not $\frac{1}{6} + \frac{1}{6}$	C1	This mark is given for a correct statement
(c)	1H, 2H, 3H, 4H, 5H, 6H 1T, 2T, 3T, 4T, 5T, 6T	B2	This mark is given for a full and correct set of outcomes (B1 is given for at least six correct)

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$75 \div 5 = 15$	M1	This mark is given for finding the amount of interest gained each year
	$\frac{15}{600} = 0.025$	M1	This mark is given for a method to find the rate of interest each year
	2.5%	A1	This mark is given for the correct answer only

Question 16 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Reflection...	B1	This mark is given for “reflection”
	...in the x -axis	B1	This mark is given for “ x -axis”

Question 17 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Cement: $10 \text{ bags} \times 25 \text{ kg} = 250 \text{ kg}$ Sand: $20 \text{ bags} \times 22.5 \text{ kg} = 4500 \text{ kg}$ Stone: $20 \text{ bags} \times 50 \text{ kg} = 1000 \text{ kg}$	P1	This mark is given for working out what Adrian already has
	80 kg of stone needed	P1	This mark is given for working out what Adrian still needs
	Two bags of stone	C1	This mark is given for a correct conclusion supported by working

Question 18 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Bill has increased 150 by 30% rather than 3%. He should have used 1.03, not 1.3	B1	This mark is given for a correct explanation
(b)	$150 \times 0.97 = 145.5$	B1	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
(a)	$3x - 12 = 12$ $3x = 24$	M1	This mark is given for a method to solve the equation
	8	A1	This mark is given for the correct answer only
(b)	$3(3b - b^2)$	M1	This mark is for finding a factor 3
	$3b(3 - b)$	A1	This mark is given for the correct answer only

Question 20 (Total 6 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)		C4	<p>Four marks are given for a fully correct Venn diagram</p> <p>(3 marks for at least 6 numbers in the correct position)</p> <p>(2 marks for at least 4 numbers in the correct position)</p> <p>(1 mark for at least 2 numbers in the correct position)</p>
(b)	$A \cap B = \{8\}$	M1	This mark is given for finding the number of members of $A \cap B$
	$\frac{1}{12}$	A1	This mark is given for the correct answer only

Question 21 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	The line of best fit is not in the correct position	C1	This mark is given for correct statement
	The scale is incorrect (140 should be 150)	C1	This mark is given for correct statement

Question 22 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$ABE = 70^\circ$ Co-interior angles add up to 180	M1	This mark is given for finding the size of angle ABE
	$EBG = 75^\circ, BEG = 45^\circ$ Angles on a straight line add up to 180	M1	This mark is given for finding the size of angles EBG and BEG
	$x = 60$ Angles in a triangle add up to 180	A1	This mark is given for the correct answer only
		C1	This mark is given for a full set of reasons given with working

Question 23 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$2000 \times (1.025)^3 = 2153.78$	P1	This mark is for showing how much money Ali has at the end of 3 years
	$1600 \times (1.035)^3 = 1773.95$	P1	This mark is for showing how much money Ben has at the end of 3 years
	Ali gets $2153.78 - 2000 = 153.78$ Ben gets $1773.95 - 1600 = 173.95$	P1	This mark is for calculating the amount of interest Ali and Ben get
	Ben gets the most interest after 3 years	C1	This mark is given for a correct conclusion supported by correct working
(b)	No; a rise would increase the interest gained by Ben (which is already greater than that gained by Ali)	C1	This mark is given for a correct explanation

Question 24 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{1}{2} \times 7 \times (10 + 16) = 91$	P1	This mark is given for a process to calculate the area of the trapezium
	$91 \div 2 = 45.5$	P1	This mark is given for a process to work out how many litres of paint are needed
	$45.5 \div 5 = 9.1$ so 10 tins needed	P1	This mark is given for a process to work out how many tins are needed (rounded up to the nearest whole number)
	$10 \times 16.99 = 169.90$	P1	This mark is given for a process to find out the total cost of the paint needed
	No, John does not have enough money.	C1	This mark is given for a correct conclusion supported by working

Question 25 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$y = 3x + c$ Using the coordinates for point A , $9 = (3 \times 5) + c \quad c = -6$	P1	This mark is given for a process to use the gradient given
	$y = 3x - 6$ Using the coordinates for point B , $15 = (3 \times d) - 6$ $3d = 21$	P1	This mark is given for a process to find a value for d
	$d = 7$	A1	This mark is given for the correct answer only

Question 26 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$5x \times 2x = 10x^2, \quad 5x \times -3 = -5x,$ $2 \times 2x = 4x, \quad 2 \times -3 = -6$	M1	This mark is given for three correct terms or four terms without + or – signs
	$10x^2 - 11x - 6$	A1	This mark is given for the correct answer only
(b)	$(x - 1)$ or $(x - 3)$ seen	M1	This mark is given for a method to factorise the expression
	$(x + 1)(x + 3)$	A1	This mark is given for the correct answer only

Question 27 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	7.547×10^{-5}	B1	This mark is given for the correct answer only
	34200	B1	This mark is given for the correct answer only
	$\frac{2.3 \times 6.7}{5} \times \frac{10^4 \times 10^3}{10^{-8}}$	M1	This mark is given for a method to work out the calculation
	3.082×10^{15}	A1	This mark is given for any number equal to 3.082×10^{15}