

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

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
	$\frac{3}{10}$	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
	$3 \times 3 = 9$	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
	$20 \div 5 = 4$	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
	10 or 12	B1	This mark is given for the correct answer only

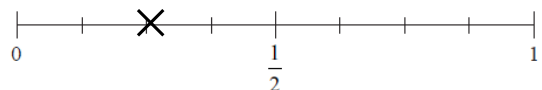
Question 5 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$15tw$	B1	This mark is given for a correct answer only (might be $15wt$)

Question 6 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: $33 + (2 \times 24.50)$ or $15 + (2 \times 10)$ or $200 - 23$	P1	This mark is given for a start to the process of finding the cost of the trip
	$33 + (2 \times 24.50) = 82$ or $15 + (2 \times 10) = 35$	P1	This mark is given for a process to find the cost of the tickets or the cost of the meals
	$23 + 33 + (2 \times 24.50) + 15 + (2 \times 10) = 140$ or $23 + 82 + 35 = 140$	P1	This mark is given for a complete process to find the cost of the trip
	$200 - 140 = 60$	A1	This mark is given for the correct answer only

Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	A	B1	This mark is given for the correct answer only
(b)(i)		B1	This mark is given for the correct answer only
(b)(ii)	$\frac{1}{8}$	B1	This mark is given for the correct answer only

Question 8 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	7	B1	This mark is given for the correct answer only
(b)	$4n = 24$ $n = 24 \div 4$	M1	This mark is given for a method to find the value of n
	6	A1	This mark is given for the correct answer only

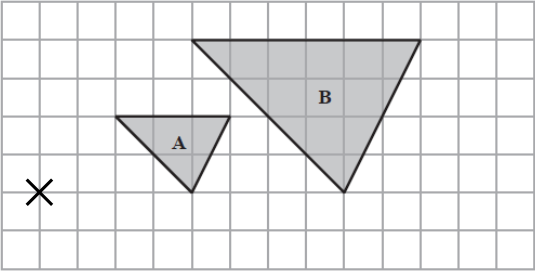
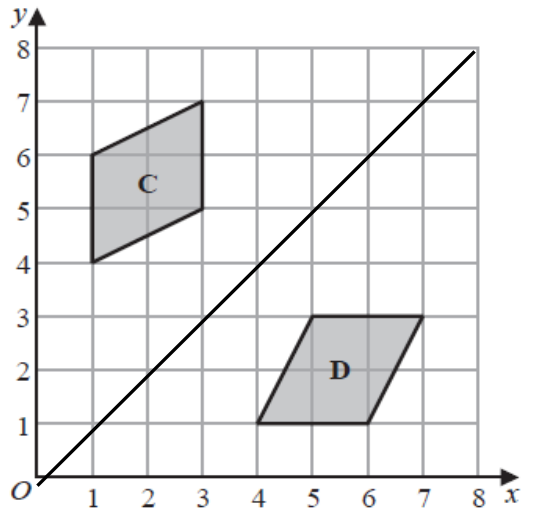
Question 9 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$360 - 70 = 290$	B1	This mark is given for the correct answer only
(b)	For example: Angles at a point add up to 360	C1	This mark is given for a valid reason stated

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$23 \div 4 = 5.75$	M1	This mark is given for a method to find the greatest number of jars of coffee Michael can buy
	5	A1	This mark is given for the correct answer only
(b)	Michael is incorrect For example: $23 \div 2 = 11.5$, so Michael can buy 11 jars	C1	This mark is given for a valid answer support by correct reasoning

Question 11(Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)(i)	2	B1	This mark is given for the correct answer only
(a)(ii)		B1	This mark is given for a cross correctly placed
(b)(i)		B1	This mark is given for the line $y = x$ correctly drawn
(b)(ii)	$y = x$	B1	This mark is given for the correct answer only

Question 12 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{1}{6} \times 120 \text{ minutes} = 20 \text{ minutes}$	P1	This mark is given for a process to find how long Elena used the swimming pool for
	$0.2 \times 120 \text{ minutes} = 24 \text{ minutes}$	P1	This mark is given for a process to find how long Elena used the gym for
	$120 - 50 - 20 - 24$	P1	This mark is given for a process to find how long Elena spent in the cafe
	26	A1	This mark is given for the correct answer only
(b)	No, she was 4 minutes late For example: $1.30 \text{ pm} + 50 + 20 + 24 = 3.04 \text{ pm}$	C1	This mark is given for a valid answer supported by correct working

Question 13 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	60	B1	This mark is given for the correct answer only
(b)	$210 - 160 = 50$	B1	This mark is given for the correct answer only
(c)	$280 - 200 = 80$ $90 + 110 = 200$	P1	This mark is given for a process to find the number of children and the total number of men and women from the graph
	80 : 200 (or equivalent, for example 8 : 20)	A1	This mark is given for a correct answer only

Question 14 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$54 \times 1 \frac{1}{2}$	M1	This mark is given for a method to find the distance
	81	A1	This mark is given for the correct answer only
(b)	$6 \times 25\,000 \text{ cm} = 150\,000 \text{ cm}$	P1	This mark is given for a process to use the scale
	$150\,000 \div (100 \times 1000)$	P1	This mark is given for a process to convert cm to km
	1.5 (km)	A1	This mark is given for the correct answer only

Question 15 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	<p style="text-align: center;"> $\left(\frac{-3+2}{2}, \frac{-2+4}{2} \right)$ </p>	M1	This mark is given for a method to find the midpoint or for the correct point marked on the graph
	(-0.5, 1)	A1	This mark is given for the correct answer only

Question 16 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(2x - 5) + (x + 1) + (x - 1) + 2x$	P1	This mark is given for a process to find the perimeter in terms of x
	$6x - 5$	P1	This mark is given for a process to find the perimeter in terms of x in its simplest form
	$6x - 5 = 52$ $6x = 57$ $x = 9.5$	P1	This mark is given for a process to find the value of x
	$DC = 2x = 19$	A1	This mark is given for the correct answer only

Question 17 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$1 - \frac{30}{100}$	M1	This mark is given for a method to find the probability the counter is not blue
	$\frac{70}{100}$	A1	This mark is given for a correct answer only
(b)	$30 \div 2 = 15$ $3 \times 15 =$	P1	This mark is given for a process to find the number of green counters
	45	A1	This mark is given for the correct answer only
(c)	Bradley is not correct For example: the total number of red and yellow counters is 25 which cannot be divided to give two equal whole numbers	C1	This mark is given for a valid answer supported by correct working

Question 18 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{5}{5+3+2} \times 240 \quad \frac{3}{5+3+2} \times 240$ $\frac{2}{5+3+2} \times 240$	P1	This mark is given for a process to find the number of cans of each drink
	cola: $\frac{5}{10} \times 240 = 120$ lemonade: $\frac{3}{10} \times 240 = 72$ orange: $\frac{2}{10} \times 240 = 48$	P1	This mark is given for finding the number of cans of each drink
	$\frac{1}{2} \times 72 = 36 \quad 72 - 36 = 36$ $\frac{1}{12} \times 48 = 4 \quad 48 - 4 = 44$	P1	This mark is given for a process to find the number of cans removed and the cans remaining
	$\frac{120}{120 + 36 + 44} = \frac{120}{200}$	P1	This mark is given for a process to find the number of cans of cola as a percentage of the new total
	$\frac{120}{200} \times 100 = 60$	A1	This mark is given for the correct answer only

Question 19 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: $250 \times 2 \rightarrow 125 \times 2 \rightarrow 25 \times 5 \rightarrow 5 \times 5$	M1	This mark is given for a complete method to find the prime factors (could be shown on a factor tree)
	$2 \times 2 \times 5 \times 5 \times 5$	M1	This mark is given for a method to find a complete factorisation
	$2^2 \times 5^3$	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)	$\frac{8}{5} + \frac{9}{4} = \frac{(4 \times 8) + (5 \times 9)}{20} = \frac{32 + 45}{20}$	M1	This mark is given for a method to find a suitable common denominator
	$\frac{87}{20} = 3\frac{17}{20}$		This mark is given for the correct answer only
(b)	$2\frac{2}{3} = \frac{8}{3}$	M1	This mark is given for find $2\frac{2}{3}$ as an improper fraction
	$\frac{8}{3} \div 6 = \frac{8}{3} \times \frac{1}{6} = \frac{8}{18} = \frac{4}{9}$	A1	This mark is given for an unsimplified fraction which equates to $\frac{4}{9}$

Question 21 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$2^{-5+8} = 2^3$ $(2^3)^2 =$	M1	This mark is given for a method to simplify the powers
	2^6	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
	For example: $4 \times 32 = 128$	M1	This mark is given for the digits 128 seen
	0.00128	A1	This mark is given for the correct answer only

Question 23 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{15}{80} \times 40\,000$	M1	This mark is given for a method to find the expected number of model B
	7500	A1	This mark is given for the correct answer only

Question 24 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)(i)	$a : b = 2 : 6$ or $a : b = 1 : 3$ $b : c = 6 : 5$ or $b : c = 3 : 2.5$	P1	This mark is given for a process to compare ratios
	$2 : 6 : 5$	A1	This mark is given for a correct answer only
(a)(ii)	$\frac{2}{2 + 6 + 5}$	P1	This mark is given for a process to find a as a fraction
	$\frac{2}{13}$	A1	This mark is given for a correct answer only
(b)	$n = 2m$ $p = 5 \times 2m = 10m$	P1	This mark is given for a process to express all numbers in terms of one number
	$1 : 10$	A1	This mark is given for a correct answer only

Question 25 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{10\,000}{2 \times 4}$	P1	This mark is given for a process to use the area of the base in the formula
	1250	A1	This mark is given for the correct answer only

Question 26 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$5x + 6 > 36$	M1	This mark is given for a correct first step (for example, multiplying all terms by 2)
	$5x > 30$	M1	This mark is given for a correct first step (for example, subtracting 6 from both sides of the inequality)
	$x > 6$	A1	This mark is given for the correct answer only
(b)	$(x + 9)(x + 1)$	M1	This mark is given for an answer in the form $(x \pm a)(x \pm b)$ where $ab = 9$ or $a + b = 10$
		A1	This mark is given for the correct answer only

