

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

November 2020 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
	0.309, 0.32, 0.35, 0.4	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
	18	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
	5	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
	0.75	B1	This mark is given for the correct answer only

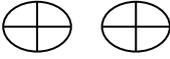
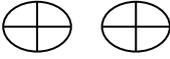
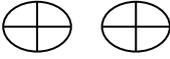
Question 5 (Total 1 mark)

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

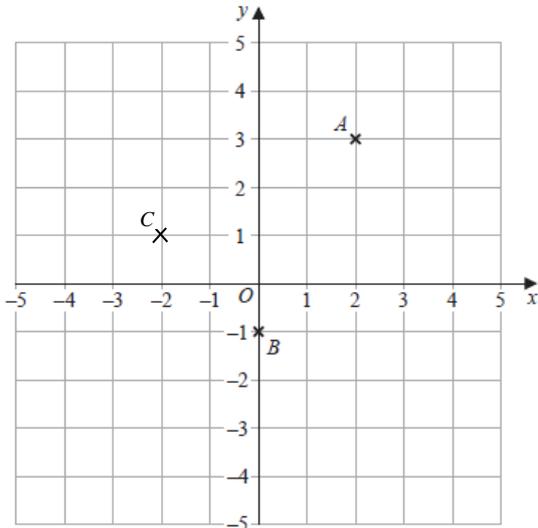
Question 6 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	<p>A horizontal number line segment from 0 to 1. There are vertical tick marks at 0, $\frac{1}{2}$, and 1. An asterisk (*) is placed above the tick mark at $\frac{1}{2}$.</p>	B1	This mark is given for the correct answer only
(b)	<p>A horizontal number line segment from 0 to 1. There are vertical tick marks at 0, $\frac{1}{2}$, and 1. An asterisk (*) is placed above the tick mark at 0.</p>	B1	This mark is given for the correct answer only

Question 7 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes						
	<table border="1"> <tr> <td>Monday</td> <td></td> </tr> <tr> <td>Tuesday</td> <td></td> </tr> <tr> <td>Wednesday</td> <td></td> </tr> </table>	Monday		Tuesday		Wednesday		C1	This mark is given for deducing that each oval represents 12 eggs (may be seen outside diagram)
Monday									
Tuesday									
Wednesday									
		C1	This mark is given for 2 ovals drawn for Tuesday						
		C1	This mark is given for $2\frac{1}{4}$ ovals drawn for Wednesday						
	<p>Key:</p>  represents 12 eggs	C1	This mark is given for a correct key						

Question 8 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	(2, 3)	B1	This mark is given for the correct answer only
(b)	(0, -1)	B1	This mark is given for the correct answer only
(c)		B1	This mark is given for C marked at (-2, 1)

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{3}{7}$	B1	This mark is given for the correct answer only
(b)	$30 \div 12$	M1	This mark is given for a method to find the correct ratio
	1 : 2.5	A1	This mark is given for the correct answer only

Question 10 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$12 \times \frac{1}{4} = 3$ $12 - 3 = 9$	P1	This mark is given for a process to work out the number of large marbles and small marbles
	$3 \times 70 = 210$ $9 \times 50 = 450$	P1	This mark is given for a process to work out the weight of the large marbles and small marbles
	$210 + 450$	P1	This mark is given for a process to find the total weight of the marbles
	660	A1	This mark is given for the correct answer only

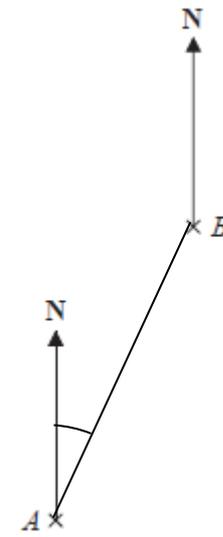
Question 11 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		M1	This mark is given for a reflection of the shape in any line or a correct reflection of at least 3 vertices
		A1	This mark is given for a fully correct reflection

Question 12 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$7 \times 2 - 3 = 11$	B1	This mark is given for a process to find the cost of three T-shirts
(b)	$x \times 2 - 3 = 41$ $2x - 3 = 41$ $2x = 44$	M1	This mark is given for a process to use an approximation to 0.749
	22	A1	This mark is given for a correct conclusion

Question 13 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	 <p>025°</p>	B1	This mark is given for the correct answer in the range 23 – 27
(b)	$AB = 5 \text{ cm}$	M1	This mark is given for a correct measurement of AB in the range 4.8 – 5.2 cm
	$5 \times 25\,000 = 125\,000$ $\frac{125\,000}{100 \times 1000} =$	M1	This mark is given for a method to use the scale to find the distance AB in km
	1.25	A1	This mark is given for the correct answer only

Question 14 (Total 3 marks)

Part	Working or answer an examiner might expect to see				Mark	Notes
		Cricket	Swimming	Tennis	Total	M1 This mark is given for entering 2, 11 and 5 in the correct places
Male		2				
Female			11		20	
Total	5				30	
	$30 - 20 = 10$ $(10 - 2) \div 2 = 4$				M1	This mark is given for a method to complete the top row of the table
	Cricket	Swimming	Tennis	Total		
Male	4	2	4	10		
Female			11	20		
Total	5			30		
		Cricket	Swimming	Tennis	Total	A1 This mark is given for a fully correct table
Male	4	2	4	10		
Female	1	8	11	20		
Total	5	10	15	30		

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$1 : 9$ $= 750 : (750 \times 9)$ $= 750 : 6750$	P1	This mark is given for finding the ratio of orange juice to water in ml
	$750 + 6750 = 7500 \text{ ml} = 7.5 \text{ litres}$	P1	This mark is given for finding the total amount of drink Jamil can produce
	7 bottles	A1	This mark is given for a correct answer only

Question 16 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	For example: the number of points only goes up by 4	C1	This mark is given for a correct explanation
(b)	For example: $0 \times 1 = 0$ (not 1)	C1	This mark is given for a correct explanation

Question 17 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$500 \times \frac{1}{10} = 50$	P1	This mark is given for a process to find a tenth of £500
	$500 - 50 = 450$	P1	This mark is given for a process to the sale price of the TV
	$450 \times 20\% = 90$	P1	This mark is given for a process to find 20% of the sale price
	$450 - 90 = 360$	P1	This mark is given for a process to find the new price of the TV
	$400 > 360$ so Chris has enough money to buy the TV on Tuesday	A1	This mark is given for a conclusion supported by correct working

Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{800 \times 300}{50}$	M1	This mark is given for rounding at least two figures (two of 800, 300, 50 seen)
	$\frac{24000}{5}$	M1	This mark is given for rounding and one operation
	4800	A1	This mark is given for the a correct answer in the range 4700 to 4800

Question 19 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$x^2 - 4x$	B1	This mark is given for the correct answer only
(b)	$5(3y - 2)$	B1	This mark is given for the correct answer only
(c)	$7f - 35 = 28$ $7f = 63$	M1	This mark is given for a method to expand brackets
	$f = 9$	A1	This mark is given for the correct answer only

Question 20 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$\begin{array}{cccc} 1 & 4 & 7 & 10 & 13 \\ & 3 & 3 & 3 & 3 \end{array}$	M1	This mark is given for a method to use differences to find the coefficient of n
	$3n - 2$	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
	$2\frac{1}{3} = \frac{7}{3}, 3\frac{3}{4} = \frac{15}{4}$	M1	This mark is given for a conversion to improper fractions
	$\frac{7}{3} \times \frac{15}{4} = \frac{105}{12}$	M1	This mark is given for a method to find the multiplication as a single improper fraction
	$\frac{105}{12} = 8\frac{9}{12} = 8\frac{3}{4}$	A1	This mark is given for the correct working to show the result as required

Question 22 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes										
	<table border="1"> <thead> <tr> <th>Equation</th> <th>Letter of graph</th> </tr> </thead> <tbody> <tr> <td>$y = x^3$</td> <td>B</td> </tr> <tr> <td>$y = x^3$</td> <td>C</td> </tr> <tr> <td>$y = x^3$</td> <td>D</td> </tr> <tr> <td>$y = \frac{1}{x}$</td> <td>A</td> </tr> </tbody> </table>	Equation	Letter of graph	$y = x^3$	B	$y = x^3$	C	$y = x^3$	D	$y = \frac{1}{x}$	A	B2	This mark is given for all four graphs correct (B1 is given for two or three graphs correct)
Equation	Letter of graph												
$y = x^3$	B												
$y = x^3$	C												
$y = x^3$	D												
$y = \frac{1}{x}$	A												

Question 23 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	A and D	C2	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
	$24 \times 50p = \text{£}12$ $\text{£}12 - \text{£}10 = \text{£}2$	M1	This mark is given for a process to find the overall profit
	$\frac{2}{10} \times 100$	M1	This mark is given for a method to find the percentage profit
	20%	A1	This mark is given for the correct answer only

Question 25 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$AEB = 63$	M1	This mark is given for a method to find the size of angle AEB
	Corresponding angles are equal	C1	This mark is given for a correct reason stated
	$BCD = 180 - 148 = 32$	M1	This mark is given for a method to find the size of angle EBA
	Angles on a straight line add up to 180	C1	This mark is given for a correct reason stated
	$EAB = 180 - 63 - 32 = 85$ Angles in a triangle add up to 180	A1	This mark is given for the correct answer with a correct reason stated

Question 26 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Range of the girls = $170 - 150 = 20$ Range of the boys = $182 - 158 = 24$ Median of the girls = 165 Median of the boys = 168	B1	This mark is given for identifying the range of the girls' heights or the range of the boys' heights or the median of the boys' heights
	For example: the median for girls (165) is less than the median for boys (168)	C1	This mark is given for a correct comparison of medians
	For example: the range for girls (20) is smaller than the range for boys (24)	C1	This mark is given for a correct comparison of ranges

Question 27 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$18 \div 3 = 6$	M1	This mark is given for method to find the area of the base of the prism
	$75 = \frac{\text{Force}}{6}$	M1	This mark is given for a method to substitute into the formula Pressure = $\frac{\text{Force}}{\text{Area}}$
	Force = $75 \times 6 = 450$	A1	This mark is given for the correct answer only

Question 28 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$67.2 \times 10^{-4} = 6.72 \times 10^{-3}$ $672 \times 10^4 = 6.72 \times 10^6$ $0.000672 = 6.72 \times 10^{-4}$	M1	This mark is given for converting each number into standard form
	$0.000672, 67.2 \times 10^{-4}, 6.72 \times 10^5, 672 \times 10^4$	A1	This mark is given for all terms in the correct order

Question 29 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{2}{5} \times 3$ and $\frac{3}{4} \times 5$	P1	This mark is given for a process to find a multiplier to equate the fractions in terms of b
	$\frac{6}{15}$ and $\frac{15}{20}$	P1	This mark is given for a process to use these terms to find the ratio
	6 : 15 : 20	A1	This mark is given for the correct answer only

Question 30 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$p - 7 = 6q$	M1	This mark is given for a method to subtract 7 from both sides of the equation
	$q = \frac{p-7}{6}$	A1	This mark is given for a process to use these terms to find the ratio
(b)	$(m^{-2})^{-3} = m^{-2 \times -3} = m^6$	B1	This mark is given for the correct answer only