

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

November 2021 student-friendly mark scheme

Please note that this mark scheme is not the one used by examiners for marking 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
<p>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.</p> <p>P1 – process mark. This mark is generally given for setting up an appropriate process to find a solution in the context of the question.</p> <p>A1 – accuracy mark. This mark is generally given for a correct answer following correct working.</p> <p>B1 – working mark. This mark is usually given when working and the answer cannot easily be separated.</p> <p>C1 – communication mark. This mark is given for explaining your answer or giving a conclusion in context supported by your working.</p> <p>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).</p>

Question 1 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	30	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
	-10, -7, -2, 0, 1, 8	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
	0.09	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
	330	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
	$7 \times 7 = 49$	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)	Trapezium	B1	This mark is given for the correct answer only
(b)	Cylinder	B1	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
	$42 \div 3$	M1	This mark is given for a method to find the amount each friend gets
	14	A1	This mark is given for the correct answer only

Question 8 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	The bar for brown has a frequency of 16, not 15	C1	This mark is given for a correct error identified

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$1.20 + 0.70 + (2 \times 2.30) = 6.50$	P1	This mark is given for a process to find the total of Danny's purchases
	$10.00 - 6.50 = 3.50$	P1	This mark is given for a process to find the correct change from £10
	Danny is not correct; he should receive 3.50 in change	A1	This mark is given for a correct conclusion supported by correct working

Question 10 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Temperature on Tuesday = $5 - 10 = -5$ Temperature on Wednesday = $-5 + 3 = -2$	P1	This mark is given for a process to work out the temperatures on Tuesday and Wednesday
	The difference between the temperatures on Monday and Wednesday = $5 - (-2) = 7$	A1	This mark is given for the correct answer only

Question 11(Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes																																									
(a)	16	B1	This mark is given for the correct answer only																																									
(b)	$(8 + 8 + 6) - (8 + 2) = 22 - 10$	M1	This mark is given for a method to find how many more video games were sold																																									
	12	A1	This mark is given for the correct answer only																																									
(c)	$\frac{1}{4} \times 32 = 8$	P1	This mark is given for a process to find the number of video games sold on Thursday																																									
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		A1	This mark is given for a correct entry in the pictogram for Friday																																									

Question 12 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Ratio of boys to girls in first group = 36:48 (= 3:4)	P1	This mark is given for a process to find the ratio of boys to girls in the first group
	Ratio of boys to girls in second group $= \frac{3}{7} : \frac{4}{7} = 3:4$	P1	This mark is given for a process to find the ratio of boys to girls in the second group
	Ann is correct since both ratios are equivalent to 3:4	A1	This mark is given for a correct conclusion

Question 13 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	The sequence could be “add one, add two, add three, etc” in which case the next term could be $4 + 3 = 7$	C1	This mark is given for a correct explanation
(b)	1, 3, 6, 10, 15, 21, 28...	M1	This mark is given for a method to find the 8th term of the sequence by adding one more each time
	36	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
	1 kg of carrots = $1.80 \div 3 = 0.60$	P1	This mark is given for a process to find the cost of 1 kg of carrots
	5 kg of potatoes = $3.45 - 1.20 = 2.25$	P1	This mark is given for a process to find the cost of 5 kg of potatoes
	4 kg of carrots + 2 kg of potatoes = $(0.60 \times 4) + (2.25 \div 5) \times 2$ = $2.40 + 0.90$	P1	This mark is given for a process to find the cost of 4 kg of carrots and 2 kg of potatoes
	= 3.30	A1	This mark is given for a fully correct answer

Question 15 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$2a + 2d$	B1	This mark is given for the correct answer only
(b)	$y(6y - 5)$	B1	This mark is given for the correct answer only
(c)	$4x = 44$	M1	This mark is given for a method to find a solution for x
	$x = 11$	A1	This mark is given for the correct answer only

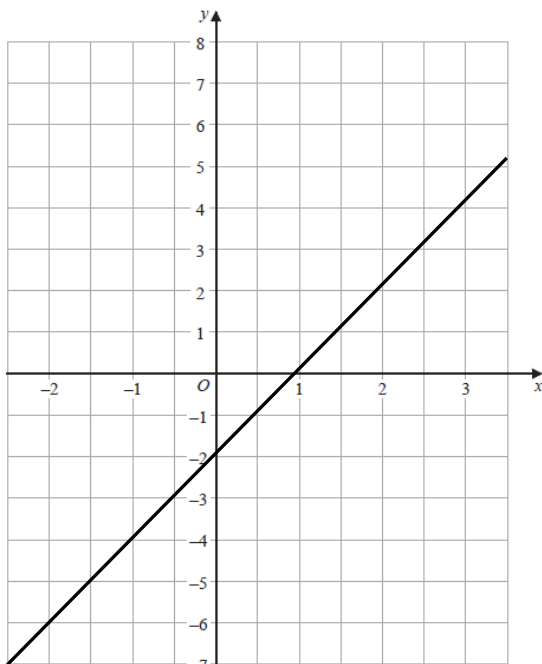
Question 16 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	If $x = 0.5$, then $AB = 0$ and $ABCD$ would not be a kite	C1	This mark is given for a correct explanation
(b)	$AD = 3(4x - 2) = 12x - 6$	P1	This mark is given for a process to find an expression for the length AD
	$\text{Perimeter} = AB + BC + CD + DA = 64$ $2(4x - 2) + 2(12x - 6) = 64$ $8x - 4 + 24x - 12 = 64$ $32x - 16 = 64$ $32x = 80$	P1	This mark is given for a process to find the value of x
	$x = 2.5$	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)	$500 \div 125 = 4$ $4 \times 12 = 48$	P1	This mark is given for a process to find out how many biscuits Heidi could make with 500 g of butter
	$700 \div 200 = 3.5$ $3.5 \times 12 = 42$	P1	This mark is given for a process to find out how many biscuits Heidi could make with 700 g of flour
	$250 \div 50 = 5$ $5 \times 12 = 60$	P1	This mark is given for a process to find out how many biscuits Heidi could make with 50 g of sugar
	Heidi can make 42 biscuits	A1	This mark is given for a correct answer only
(b)	No; Heidi still only has enough flour to make 42 biscuits	C1	This mark is given for a correct conclusion

Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		B1	This mark is given for a line with a gradient of 2
		B1	This mark is given for a line intercepting the y-axis at $y = -2$
		B1	This mark is given for a fully correct graph

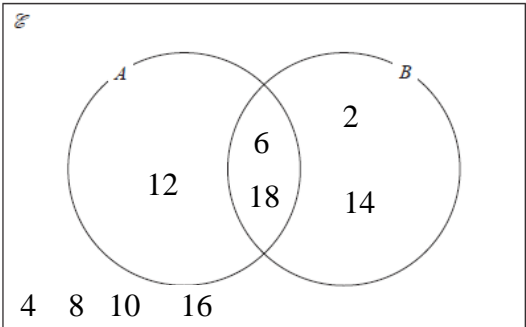
Question 19 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$80 - 56 = 24$	M1	This mark is given finding the loss (in £) selling the watch
	$\frac{24}{80} \times 100$	M1	This mark is given for a process to find the percentage loss
	30	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)	$\begin{array}{r} 3.67 \\ \times 4.2 \\ \hline 15.414 \end{array}$	M1	This mark is given for a method to find a solution
		A1	This mark is given for 15414 seen
		A1	This mark is given for the correct answer only
(b)	For example $5984 \div 16$	M1	This mark is given for a method to simplify to find a solution
	$\begin{array}{r} 374 \\ 16 \overline{)5984} \end{array}$	A1	This mark is given for 374 seen
	37.4	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
		M1	This mark is given for 6 and 18 correctly placed
		M1	This mark is given for 2 and 14 correctly placed
		A1	This mark is given for a fully correct Venn diagram

Question 22 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{21}{5} - \frac{8}{3}$	M1	This mark is given for a method to find mixed numbers as improper fractions
	$= \frac{63}{15} - \frac{40}{15} = \frac{23}{15}$	M1	This mark is given for a method to find fractions with a common denominator
	$= 1 \frac{8}{15}$	A1	This mark is given for a correct answer only

Question 23 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$220\,000 \times 0.2 = 44\,000$	P1	This mark is given for a process to find the amount of decrease in the value of Tamara's house
	Tamara's house at the end of 2019: $220\,000 - 44\,000 = 176\,000$	P1	This mark is given for a process to find the value of Tamara's house at the end of 2019
	Rahim's house at the end of 2019: $160\,000 \times 1.3 = 208\,000$	A1	This mark is given for a process to find the value of Rahim's house at the end of 2019
	$208\,000 > 176\,000$ Rahim's house had the greater value	C1	This mark is given for a correct conclusion supported by correct working

Question 24 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$4 : 7 : 15$ $15 - 7 = 8$	P1	This mark is given for a process to find how many more stickers Ibrahim has using the ratio given in the question
	$24 \div 8 = 3$ Rosie, Matilda and Ibrahim have stickers in ratio $12 : 21 : 45$	P1	This mark is given for process to find the number of stickers each person has
	Ibrahim has $45 - 12$ more stickers than Rosie $= 33$	A1	This mark is given for the correct answer only

Question 25 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{1}{2} (5 \times h) \times 25 = 750$	P1	This mark is given for a process to find an equation in h for the volume of the prism
	$h = \frac{750}{62.5}$	P1	This mark is given for a process to find an equation for the height of the prism
	$h = 12$	A1	This mark is given for a correct answer only

Question 26 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Surface area of cube = $6x^2$	M1	This mark is given for a method to find an expression for the surface area of the cube
	Surface area of sphere = $4\pi \times 3^2 = 36\pi$	M1	This mark is given for a method to find an expression for the surface area of the sphere
	$6x^2 = 36\pi$ $x^2 = 6\pi$	M1	This mark is given for a method to equate expressions for the surface areas
	$x = \sqrt{k\pi}$ where $k = 6$	A1	This mark is given for correctly showing that $x = \sqrt{k\pi}$

Question 27 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$7.15 \leq p < 7.25$	B1	This mark is given a correct lower bound only
		B1	This mark is given a correct upper bound only

Question 28 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(i)	gradient = -4	B1	This mark is given for a correct answer only
(ii)	$(0, 3)$	B1	This mark is given for a correct answer only