

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

November 2021 shadow student-friendly mark scheme (Set 1)

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
	70	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
	-8, -6, -3, 0, 2, 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
	0.07	B1	This mark is given for the correct answer only

Question 4 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	490	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
	$9 \times 9 = 81$	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)	Parallelogram	B1	This mark is given for the correct answer only
(b)	Cuboid or Prism	B1	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
	$51 \div 3$	M1	This mark is given for a method to find the amount each shopkeeper gets
	17	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 scale goes up in 4s but up by 6 from 28 to 34	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
	$4.50 + 0.70 + (2 \times 1.30) = 7.80$	P1	This mark is given for a process to find the total of Dinesh's purchases
	$10.00 - 7.80 = 2.20$	P1	This mark is given for a process to find the correct change from £10
	Dinesh is correct; he should receive 2.20 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 Saturday = $6 - 12 = -6$ Temperature on Sunday = $-6 + 4 = -2$	M1	This mark is given for a process to work out the temperatures on Saturday and Sunday
	The difference between the temperatures on Friday and Sunday = $6 - (-2) = 8$	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)	24	B1	This mark is given for the correct answer only																																
(b)	$(12 + 12 + 9) - (12 + 3) = 33 - 15$	M1	This mark is given for a method to find how many more shrubs were sold																																
	18	A1	This mark is given for the correct answer only																																
(c)	$\frac{1}{3} \times 36 = 12$	P1	This mark is given for a process to find the number of shrubs sold on Friday																																
	<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="padding: 2px;">Tuesday</td> <td style="padding: 2px;"> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table> </td> </tr> <tr> <td style="padding: 2px;">Wednesday</td> <td style="padding: 2px;"> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table> </td> </tr> <tr> <td style="padding: 2px;">Thursday</td> <td style="padding: 2px;"> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table> </td> </tr> <tr> <td style="padding: 2px;">Friday</td> <td style="padding: 2px;"> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table> </td> </tr> <tr> <td style="padding: 2px;">Saturday</td> <td style="padding: 2px;"> <table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table> </td> </tr> </table>	Tuesday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>					Wednesday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>							Thursday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>					Friday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>					Saturday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>					A1	This mark is given for a correct entry in the pictogram for Friday
	Tuesday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>																																	
Wednesday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>																																		
Thursday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>																																		
Friday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>																																		
Saturday	<table style="display: inline-table; border-collapse: collapse;"> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> <tr><td style="border: 1px solid black; width: 15px; height: 15px;"></td><td style="border: 1px solid black; width: 15px; height: 15px;"></td></tr> </table>																																		
		A1	This mark is given for a correct entry in the pictogram for Saturday																																

Question 12 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Ratio of men to women in first club = 36:54 (= 4:6)	P1	This mark is given for a process to find the ratio of men to women in the first club
	Ratio of men to women in second club $= \frac{4}{9} : \frac{5}{9} = 4:5$	P1	This mark is given for a process to find the ratio of men to women in the second club
	Alice is in correct since the ratios are different	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 two, add four, add six, etc” in which case the next term could be $8 + 6 = 14$	C1	This mark is given for a correct explanation
(b)	1, 3, 6, 10, 15, 21, 28, 36, ...	M1	This mark is given for a method to find the 9th term of the sequence by adding one more each time
	45	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 potatoes = $3.50 \div 5 = 0.70$	P1	This mark is given for a process to find the cost of 1 kg of potatoes
	2 kg of turnips = $9.50 - 4.90 = 4.60$	P1	This mark is given for a process to find the cost of 2 kg of turnips
	9 kg of carrots + 3 kg of potatoes = $(0.70 \times 9) + (4.60 \div 2) \times 3$ = $6.30 + 6.90$	P1	This mark is given for a process to find the cost of 9 kg of potatoes and 3 kg of turnips
	= 13.20	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)	$5g + 5h$	B1	This mark is given for the correct answer only
(b)	$x(8x - 7)$	B1	This mark is given for the correct answer only
(c)	$6x = 48$	M1	This mark is given for a method to find a solution for x
	$x = 8$	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 $x = 1.5$, then $AB = 0$ and $ABCD$ would not be a kite	C1	This mark is given for a correct explanation
(b)	$AD = 2(4x - 6) = 8x - 12$	P1	This mark is given for a process to find an expression for the length AD
	Perimeter = $AB + BC + CD + DA = 60$ $2(4x - 6) + 4(4x - 6) = 60$ $8x - 12 + 16x - 24 = 60$ $24x - 36 = 60$ $24x = 96$	P1	This mark is given for a process to find the value of x
	$x = 4$	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)	$450 \div 150 = 3$ $3 \times 16 = 48$	P1	This mark is given for a process to find out how many biscuits Harry could make with 600 g of butter
	$800 \div 200 = 4$ $4 \times 16 = 64$	P1	This mark is given for a process to find out how many biscuits Harry could make with 800 g of flour
	$200 \div 50 = 4$ $4 \times 16 = 64$	P1	This mark is given for a process to find out how many biscuits Harry could make with 200 g of sugar
	Harry can make 48 biscuits	A1	This mark is given for a correct answer only
(b)	Yes; Harry can now make more 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 at least two of the points $(-2, -6)$, $(-1, -4)$, $(0, 2)$, $(1, 0)$, $(2, 2)$, $(3, 4)$ correctly stated or plotted
		B1	This mark is given for a straight line segment drawn through least three of the points $(-2, -6)$, $(-1, -4)$, $(0, 2)$, $(1, 0)$, $(2, 2)$, $(3, 4)$ correctly stated or plotted
		B1	This mark is given for a fully correct graph

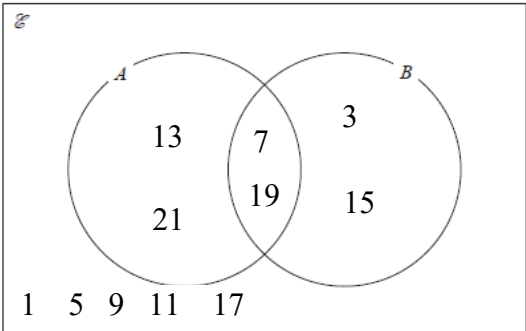
Question 19 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$75 - 60 = 15$	P1	This mark is given finding the loss (in £) selling the headphones
	$\frac{15}{75} \times 100$	P1	This mark is given for a process to find the percentage loss
	20	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)	4.66	M1	This mark is given for a method to find a solution
	$\begin{array}{r} 4.9 \times \\ \hline 4194 \\ 18640 \\ \hline 22834 \\ 22.834 \end{array}$	A1	This mark is given for 22384 seen
	22.834	A1	This mark is given for the correct answer only
(b)	For example $7722 \div 18$	M1	This mark is given for a method to simplify to find a solution
	$\begin{array}{r} 429 \\ 18 \overline{)7722} \end{array}$	A1	This mark is given for 429 seen
	42.9	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 7 and 19 correctly placed
		M1	This mark is given for 3, 13, 15 and 21 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
	$\frac{17}{5} - \frac{5}{3}$	M1	This mark is given for a method to find mixed numbers as improper fractions
	$= \frac{51}{15} - \frac{25}{15} = \frac{26}{15}$	M1	This mark is given for a method to find fractions with a common denominator
	$= 1 \frac{11}{15}$	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
	$25\,000 \times 0.3 = 7500$	P1	This mark is given for a process to find the amount of decrease in the value of Tom's car
	Tom's car at the end of 2020: $25\,000 - 7500 = 17\,500$	P1	This mark is given for a process to find the value of Tom's car at the end of 2020
	Jim's car at the end of 2020: $16\,000 \times 1.1 = 17\,600$	P1	This mark is given for a process to find the value of Jim's car at the end of 2020
	$17\,600 > 17\,500$ Jim's car 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
	$3 : 8 : 14$ $14 - 8 = 6$	M1	This mark is given for a process to find how many more tomatoes Lucy has than Katie using the ratio given in the question
	$30 \div 6 = 5$ Jane, Katie and Lucy have tomatoes in ratio $15 : 40 : 70$	M1	This mark is given for process to find the number of tomatoes each person has
	Lucy has $70 - 15$ more tomatoes than Jane $= 55$	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
	$\frac{1}{2}(6 \times h) \times 20 = 600$	P1	This mark is given for a process to find an equation in h for the volume of the prism
	$3h = \frac{600}{20}$	P1	This mark is given for a process to find an equation for the height of the prism
	$h = 10$	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 = $6 \times (2a)^2 = 24a^2$	P1	This mark is given for a process to find an expression for the surface area of the cube
	Surface area of sphere = $4\pi \times 6^2 = 144\pi$	P1	This mark is given for a process to find an expression for the surface area of the sphere
	$24a^2 = 144\pi$ $a^2 = 6\pi$	P1	This mark is given for a process to equate expressions for the surface areas
	$a = \sqrt{k\pi}$ where $k = 6$	C1	This mark is given for showing that $a = \sqrt{k\pi}$

Question 27 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$6.25 \leq p < 6.35$	B2	These marks are given for a fully correct interval (B1 is given for either 6.25 or 6.35 in correct position)

Question 28 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(i)	gradient = -2	B1	This mark is given for a correct answer only
(ii)	(0, 5)	B1	This mark is given for a correct answer only