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

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
	$\dfrac{67}{100}$	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
	500	B1	This mark is given for the correct answer only
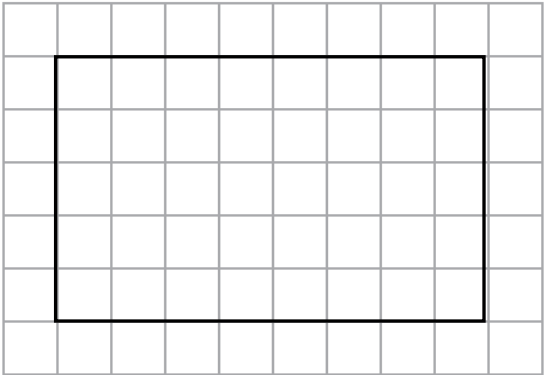
Question 3 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.26, 0.62, 2.06, 2.60	B1	This mark is given for the correct answer only

Question 4 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	$3y$	B1	This mark is given for the correct answer only
(b)	$4m$	B1	This mark is given for the correct answer only

Question 5 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$32 \div 4 = 8$ $20 \div 4 = 5$ For example: 	B2	These marks are given for a fully correct 8 cm by 5 cm rectangle (B1 is given for a rectangle with one correct dimension)

Question 6 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	36	B1	This mark is given for the correct answer only
(b)	32 or 40	B1	This mark is given for a correct answer only

Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$150 - 54 = 96$	P1	This mark is given for a process to find the amount of sand in sacks **A** and **B**
	$96 \div 2$	P1	This mark is given for a process to find the amount of sand in sack **A**
	48	A1	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
	$6 + 4 + 5 + 8 + 7 + 5 = 35$	P1	This mark is given for a process to find how often the dice was thrown
	$35 \div 7$	P1	This mark is given for a process to find how often each girl throws the dice
	5	A1	This mark is given for the correct answer only

Question 9 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Reece should multiply 5×3 before adding 4	P1	This mark is given for a correct explanation

Question 10 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\dfrac{37}{70}$	B1	This mark is given for the correct answer only (or any equivalent fraction)

Question 11(Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		B1	This mark is given for a correct reflection of the shape in any line or a correct reflection of at least one vertex
		B1	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)	$\dfrac{17.94}{6.07} = 2.9555189\ldots$	M1	This mark is given for method to find a value for $17.94 \div 6.07$
	$\sqrt{2.9555189\ldots} = 1.7191622\ldots$	A1	This mark is given for the correct answer only
(b)	1.72	B1	This mark is given for the correct answer only

Question 13 (Total 3 marks)

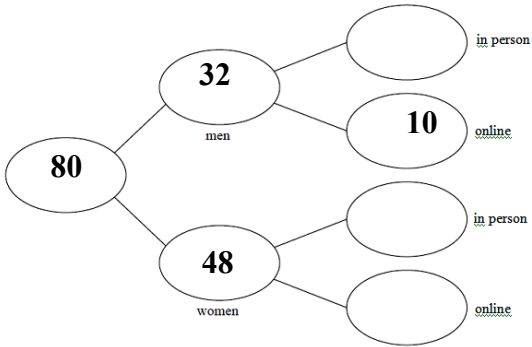| Part	Working an or answer examiner might expect to see	Mark	Notes
(i)	$180 - 31 - 82$	M1	This mark is given for a method to find the value of x
	67	A1	This mark is given for the correct answer only
(ii)	Angles on a straight line add up to 180	C1	This mark is given for correct explanation

Question 14 (Total 3 marks)

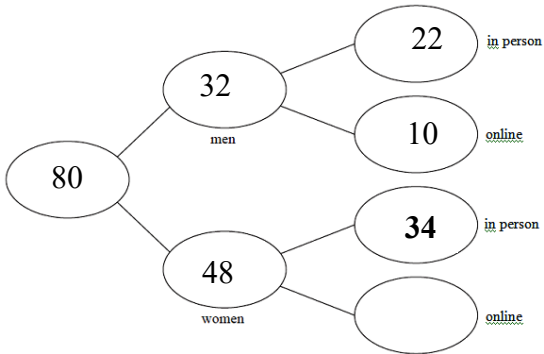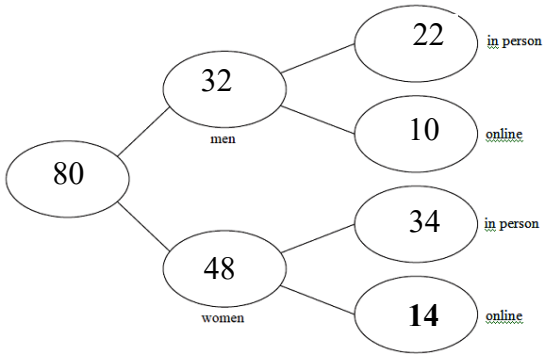| Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	e.g. £90 for four hours $\frac{90}{4} = 22.50$	B1	This mark is given for finding the correct answer using information from the graph
(b)	28×22.50	M1	This mark is given for a method to find the total Japleen is paid
	630	A1	This mark is given for the correct answer only
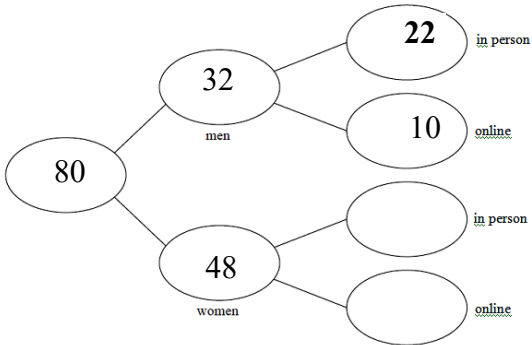
Question 15 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: 0.666…, 0.4, 0.555…, 0.375	M1	This mark is given for a method to write the fractions in order of size
	$\frac{3}{8}, \frac{2}{5}, \frac{5}{9}, \frac{2}{3}$	A1	This mark is given for the correct answer only

Question 16 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{216}{90} = 2.4$	M1	This mark is given for a method to find the number of shirts represented by 1° in the pie chart
	2.4×75	M1	This mark is given for a method to find the total number of blue shirts
	180	A1	This mark is given for a correct answer only
(b)	$216 \times \frac{360}{90} = 864$	M1	This mark is given for a method to find the total number of shirts
	$\frac{400}{864} \ (= \frac{25}{54})$	A1	This mark is given for a correct answer only (or equivalent fraction, percentage or decimal)

Question 17 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		C1	This mark is given for adding 10 (men preferring online) in the correct part of the frequency tree
		C1	This mark is given for adding 22 (men preferring in person) in the correct part of the frequency tree
	$80 \times 0.7 = 56$	M1	This mark is given for a method to find how many doctors in total prefer in person
		M1	This mark is given for adding 34 (women preferring in person) in the correct part of the frequency tree
		A1	This mark is given for adding 14 (women preferring online) in the correct part of the frequency tree

Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	<table><tr><th>Length of roll (metres)</th><th>Number of rolls</th><th>Total</th></tr><tr><td>5</td><td>16</td><td>80</td></tr><tr><td>6.5</td><td>10</td><td>65</td></tr><tr><td>7</td><td></td><td></td></tr><tr><td>7.5</td><td>18</td><td>135</td></tr><tr><td>8</td><td>12</td><td>96</td></tr><tr><td></td><td></td><td></td></tr></table>	P1	This mark is given for a process to find the total length of all the other rolls of fabric
	$453 - 366 = 77$	P1	This mark is given for a process to find the total length of all the 7 m rolls
	$77 \div 7 = 11$	A1	This mark is given for a correct answer only

Question 19 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Simon's share $= 1200 \times \dfrac{3}{8} = 450$	P1	This mark is given for a process to find Simon's share
	Tamsy's share $= \dfrac{1}{3} \times (1200 - 450) = 250$	P1	This mark is given for a process to find Tamsy's share
	Uzma's share $= 1200 - 450 - 250 = 500$ If shared equally, each share $= 400$	P1	This mark is given for a process to find Uzma's share and a comparison with equal shares
	No, Uzma is incorrect	C1	This mark is given for a correct conclusion supported by correct working

Question 20 (Total 2 marks)

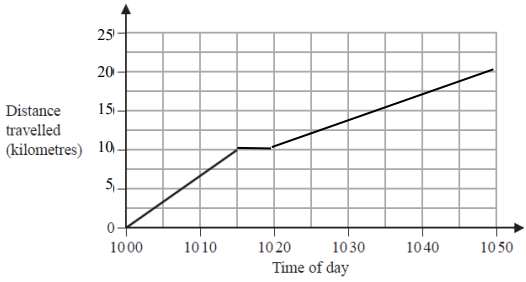| Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	$a^{5-7} = a^{-2}$	B1	This mark is given for the correct answer only
(b)	$m^{-2 \times 5} = m^{-10}$	B1	This mark is given for the correct answer only

Question 21 (Total 3 marks)

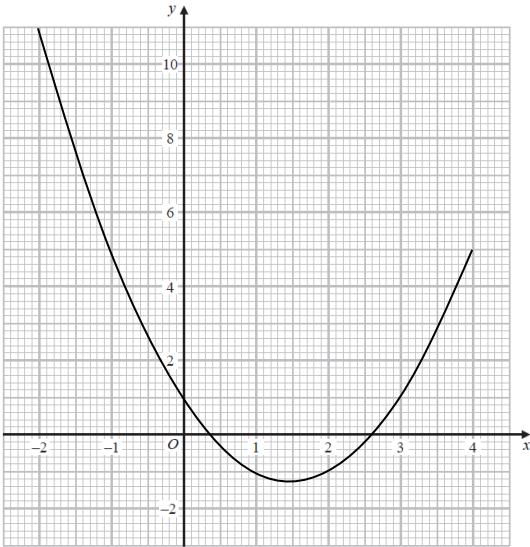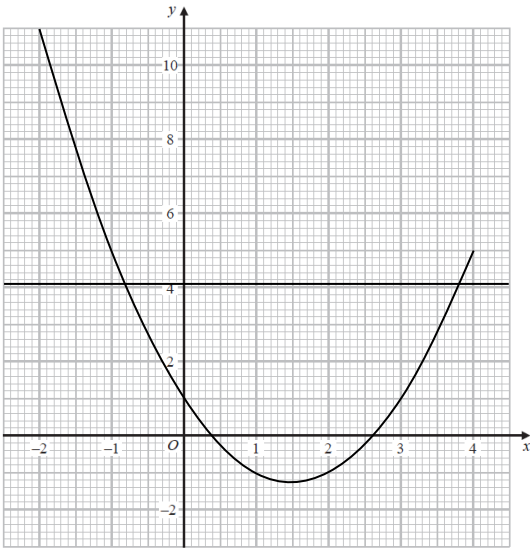| Part	Working or answer an examiner might expect to see	Mark	Notes
	$x \geq -2$	B1	This mark is given for the correct answer only
		C2	These marks are given for a fully correct diagram (C1 is given for an open circle at –4 or a closed circle at 0)

Question 22 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	For example: $72 = 2 \times 2 \times 2 \times 3 \times 3$ $108 = 2 \times 2 \times 3 \times 3 \times 3$ **or** Factors of 72: 1, 2, 3, 4, 6, 8, 9, 12, 18, 36, 72 Factors of 108: 1, 2, 3, 4, 6, 9, 12, 18, 27, 36, 54, 108	M1	This mark is given for a method to find the highest common factor (HCF)
	HCF = $2 \times 2 \times 3 \times 3 = 36$ **or** 36 identified from both lists	A1	This mark is given for a correct answer only
(b)	For example: $36 = 2 \times 2 \times 3 \times 3$ $60 = 2 \times 2 \times 3 \times 5$ **or** Multiples of 36: 36, 72, 108, 144, 180, 216, … Multiples of 60: 60, 120, 180, 240, 300, …	M1	This mark is given for a method to find the lowest common multiple (LCM)
	LCM = $2 \times 2 \times 3 \times 3 \times 5 = 180$ **or** 180 identified from both lists	A1	This mark is given for a correct answer only

Question 23 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\dfrac{10 \times 60}{15}$	M1	This mark is given for a method to find Kieran's speed
	40	A1	This mark is given for a correct answer only
(b)	$\dfrac{30 \times 20}{60} = 10$	M1	This mark is given for a method to find the distance travelled in the final 20 minutes
		C2	This mark is given for a fully correct travel graph (C1 is given for one correct line added to the graph)

Question 24 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	5, –1, –1, 1	B2	These marks are given for all 4 values correct (B1 is given for 2 or 3 values correct)
(b)		M1	This mark is given for at least 5 marks plotted correctly
		A1	This mark is given for a fully correct curve drawn
(c)		M1	This mark is given for $y = 4$ drawn **or** intersections with $y = 4$ drawn **or** $x^2 - 3x + 1 = 4$ drawn
	3.8, –0.8	A1	This mark is given for answers in the ranges 3.7 to 3.9 and –0.7 to –0.9

Question 25 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$12^2 + 10^2 = 244$	P1	This mark is given for a process to find the length of the hypotenuse of the triangle
	$\sqrt{244} = 15.6\ldots$	P1	This mark is given for finding the length of the hypotenuse of the triangle
	$10 + 10 + 15.6 + (15.6 - 12) + 12$	P1	This mark is given for a process to find the length of the perimeter of the shape
	51.2	A1	This mark is given for an answer in the range 51 to 52

Question 26 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$BC = 14 \times \tan 51° = 14 \times 1.234\ldots$	M1	This mark is given for a method to find the length BC
	17.3	A1	This mark is given for an answer in the range 17.2 to 17.3
(b)	$\cos x = \dfrac{14}{19}$	M1	This mark is given for a method to find the size of angle x
	42.5	A1	This mark is given for an answer in the range 42.3 to 42.6

Question 27 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(x - 7)(x + 3)$	M1	This mark is given for a method to factorise. e.g. $(x \pm 7)(x \pm 3)$
		M1	This mark is given for a fully correct factorisation
	$x = -3, x = 7$	A1	This mark is given for a correct answer only

Question 28 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$325\,600 \div 0.88$	M1	This mark is given for a method to find the original price of the house
	$370\,000$	A1	This mark is given for a correct answer only

Part	Working or answer an examiner might expect to see	Mark	Notes