

GCSE Mathematics (1MA1) – Foundation Tier Paper 3F

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
	$\frac{300}{100} = 3$	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	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
	$\frac{40}{100}$	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
	6.25	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
	6, -4, 0, 1, 7	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)	5	B1	This mark is given for the correct answer only
(b)	5 and 6	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
	$\frac{12}{16}$	M1	This mark is given for a method to find the number of shaded squares as a fraction of the total
	$\frac{3}{4}$	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
	$200 \div 25 = 8$	P1	This mark is given for a process to find the number of boxes of tiles
	8×9.75	P1	This mark is given for a process to find the total cost of the boxes of tiles
	78	A1	This mark is given for a correct answer only

Question 9 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{300}{10} = 30$	B1	This mark is given for a correct answer only
(b)	$3.5 \times 12 = 42$	B1	This mark is given for a correct answer only
(c)	$\frac{1}{20}$	B1	This mark is given for a correct answer only (accept 0.05)

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	80	B1	This mark is given for the correct answer read off the graph
(b)	8	B1	This mark is given for the correct answer only
(c)	For example: Yes, because 27 is greater than 7 Yes, because the drop is 20 more Yes, the gradient is steeper (in the first 3 minutes) and is then less steep (in the last 3 minutes) Yes, because the drop is 20 less in the last 3 minutes	C1	This mark is given for a conclusion and reason

Question 11 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$360 - 130 - 95 - 65 = 70$	M1	This mark is given for a method to find the missing angle of the quadrilateral
	$180 - 70$	M1	This mark is given for a method to find the angle y
	110	A1	This mark is given for the correct answer only

Question 12 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)(i)	20, 15	B1	This mark is given for a correct answer only
(a)(ii)	45, 40, 35, 30, 25, 20, 15, 10, 5, 0, -5 11th term	B1	This mark is given for a correct answer only
(b)	$(4 \times 9) + 3 = 39$	B1	This mark is given for a correct answer only

Question 13 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$10 + 7 + 4 + 5 + (10 - 4) + (7 - 5)$ $= 26 + 6 + 2$	M1	This mark is given for a method to find the length of the perimeter
	34	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
(a)	$5x + y$	M1	This mark is given for $5x$ or y seen
		A1	This mark is given for the correct answer only
(b)	$5p = 15$	M1	This mark is given for subtracting 7 from both sides of the equation
	3	A1	This mark is given for the correct answer only

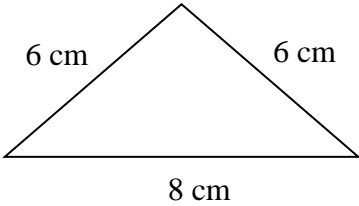
Question 15 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Shop A: $30 \div 4 = 7.5$ so 8 packets needed Shop B: $30 \div 6 = 5$, so 5 packets needed	P1	This mark is given for a method to find the number of packets of batteries needed from each shop
	Shop A: $8 \times 1.60 = 12.80$ Shop B: $5 \times 2.70 = 13.50$	P1	This mark is given for a method to find the cost of the packets of batteries from one shop
		P1	This mark is given for a method to find the cost of the packets of batteries from both shops
	Harry should buy batteries from Shop A	C1	This mark is given for a valid conclusion following correct working
(b)	For example: No, since A is 12 and B is 13.50 No, since A is just 80p less and B is the same. No, since A is less and B has not changed. No, since A is 1.50 less No, since 40p is less than 45p	C1	This mark is given for a valid conclusion following correct working

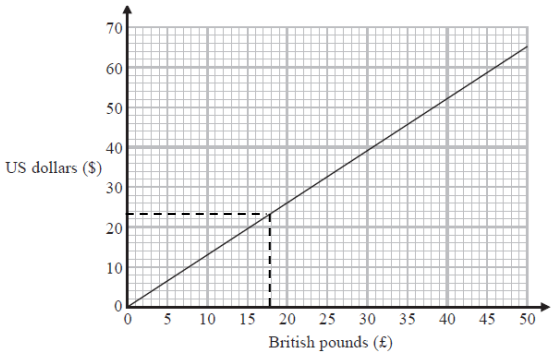
Question 16 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{5}{5 + 4 + 2}$	M1	This mark is given for a method to find the probability where $\frac{5}{n}$ seen ($n > 5$) or $\frac{m}{11}$ seen ($m < 11$)
	$\frac{5}{11}$	A1	This mark is given for the correct answer only
(b)	$1 - 0.3 = 0.7$	B1	This mark is given for the correct answer only

Question 17 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: 	M1	This mark is given for one line drawn with length 6 cm
		A1	This mark is given for an isosceles triangle correctly drawn

Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	 <p>For example: $\\$345 \div 15 = \\23</p>	M1	This mark is given for a method to use the figures given on the graph
	$\$23 = \pounds 18$ $\$345 = 15 \times \pounds 18$	M1	This mark is given for a method to read off an appropriate conversion from the graph
	$\pounds 270$	A1	This mark is given for the correct answer in the range 260 – 270

Question 19 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{40}{100} \times (\text{total number of sandwiches}) = 56$ total number of sandwiches = $\frac{56}{40} \times 100$	M1	This mark is given for a method to find the total number of sandwiches
	140	A1	This mark is given for the correct answer only
(b)	$\frac{18}{56} = 0.3214285\dots$	M1	This mark is given for a method to find the percentage
	32% (to the nearest whole number)	A1	This mark is given for the correct answer only

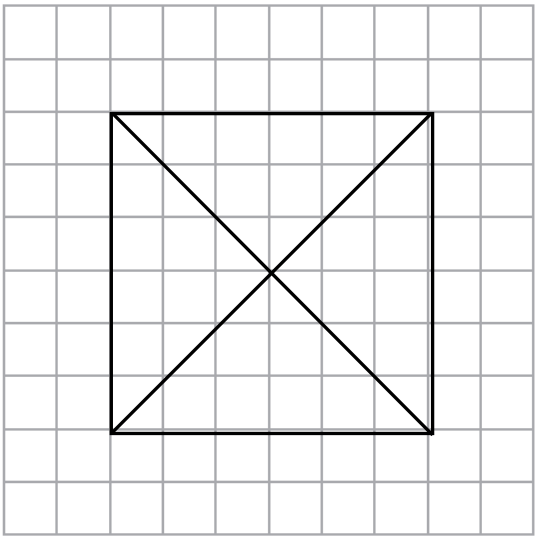
Question 20 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3 \times 80 = 240$	P1	This mark is given for a process to find the total amount of money shared
	$240 - 100 - 65 = 75$	P1	This mark is given for a process to find out how much money Carl has
	$75 - (3 \times 5) - 20 = 40$	P1	This mark is given for a process to find out how much money Carl has in ten pound notes
	$40 \div 10 = 4$	A1	This mark is given for the correct answer only

Question 21 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	25	A1	This mark is given for the correct answer only
(b)	For example: Simon; he uses more trials Simon; he does 10 times more Simon, since $100 > 10$	C1	This mark is given for a valid conclusion with a correct reason

Question 22 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		M1	This mark is given for a square of side 6 cm
		A1	This mark is given for a fully correct plan

Question 23 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$n^{3+5} = n^8$	B1	This mark is given for the correct answer only
(b)	$c^{3-2} \times d^{4-1}$	M1	This mark is given for either c or d^3 seen
	cd^3	A1	This mark is given for the correct answer only
(c)	$5x > 14$	M1	This mark is given for a method to remove the fraction from the inequality
	$x > \frac{14}{5}$	A1	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
	$\frac{30}{24} = 1.25, \frac{12}{8} = 1.5$	P1	This mark is given for a process to find out how many hours Andy cycles and runs for
	1 hour 15 minutes + 1 hour 30 minutes	P1	This mark is given for a process to convert into hours and minutes
	2 hours and 45 minutes	A1	This mark is given for the correct answer only

Question 25 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$9.35 \leq m < 9.45$	B1	This mark is given for 9.35 in the correct position
		B1	This mark is given for 9.45 in the correct position

Question 26 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$5 \times 9 = 45$ 3 kg $10 \times 14 = 140$ 5 boxes = 10 kg	P1	This mark is given for a process to find the areas of the lawns and the amount of grass seed required
	$\frac{140}{45} = 3.111\dots$	P1	This mark is given for a process to find the comparative sizes of the lawns
	$3 \times 3.111\dots = 9.333\dots$ kg	P1	This mark is given for a process to find the amount of grass seed needed for the larger lawn
	Yes, Maisie has enough grass seed	C1	This mark is given for a valid conclusion supported by correct working
(b)	Yes, there is an effect. 9 kg is not enough grass seed since 9.333... kg is required	C1	This mark is given for a valid conclusion supported by correct working

Question 27 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}, \frac{1}{3}, \frac{2}{3}$	B2	These marks are given for six fully correct probabilities (B1 is given for at least two correct probabilities)
(b)	$\frac{1}{3} \times \frac{2}{3}$	M1	This mark is given for a method to find the probability
	$\frac{2}{9}$	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
(a)	$x = -2, y = 4$	B1	This mark is given for the correct answer only
(b)	0.6, 3.4	M1	This mark is given for correct answers shown on the graph or given as coordinates (for example (0.6, 0) and (3.4, 0))
		A1	This mark is given for the correct answer only (in the ranges 0.55 to 0.6 and 3.4 to 3.45)

Question 29 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{1}{2}(6 \times 4 \times 10) = 120$	M1	This mark is given for a method to find the volume of the prism
	120×0.8	M1	This mark is given for a method to find the mass of the prism
	96	A1	This mark is given for the correct answer only