

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

November 2018 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 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(i)	43.7	B1	This mark is given for the correct answer only
(ii)	$\frac{5}{7}$	B1	This mark is given for the correct answer only (or an equivalent fraction)

Question 2 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3\% = 0.03 = \frac{3}{100}$	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
	1.2	B1	This mark is given for the correct answer only

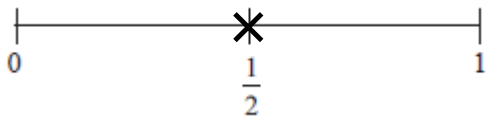
Question 4 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$720 \div 8 = 90$	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
(a)	Cuboid	B1	This mark is given for the correct answer only
(b)	12	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)		B1	This mark is given for a cross at $\frac{1}{2}$
(b)	$\frac{2}{6}$ or $\frac{1}{3}$	B1	This mark is given for the correct answer only (or an equivalent fraction)

Question 7 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$1.88 + 0.06$ or $188 + 6$	M1	This mark is given for a method to find the height of David
	1.94 m or 194 cm	B1	This mark is given for the correct answer with units shown (m or cm)

Question 8 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	20 pens costs $\text{£}2.38 \times 10 = \text{£}23.80$	P1	This mark is given for finding the cost of 20 pens
	20 folders cost $\text{£}5.60 \times 4 = \text{£}22.40$	P1	This mark is given for finding the cost of 20 folders
	The total cost = $\text{£}23.80 + \text{£}22.40 = \text{£}46.20$	P1	This mark is given for finding the total cost of 20 pens and 20 folders
	Yes, Ben has enough money	C1	This mark is given for the correct conclusion supported by correct working

Question 9 (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)	C and D	B1	This mark is given for the correct answer only

Question 10 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
		B1	This mark is given for a correct reflection drawn

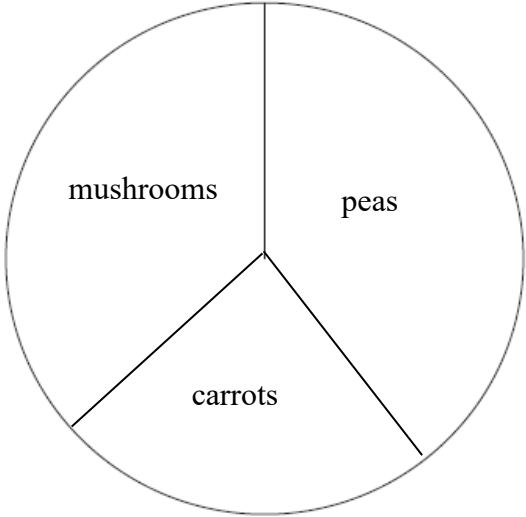
Question 11 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$100 - 30 = 70$	P1	This mark is given for a process to find out the percentage of people who are women
	$28 \div 0.7$	P1	This mark is given for a process to find out how many people were at the meeting
	40	A1	This mark is given for the correct answer only

Question 11 (Total 3 marks) – bar model solution

Part	Working or answer an examiner might expect to see	Mark	Notes																						
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td> </tr> <tr> <td colspan="7">28 women</td> <td colspan="4">men</td> </tr> </table>	10	10	10	10	10	10	10	10	10	10	10	28 women							men				P1	This mark is given for a process to represent the percentages of men and women at the meeting in a bar model
10	10	10	10	10	10	10	10	10	10	10															
28 women							men																		
	<table border="1" style="width: 100%; text-align: center;"> <tr> <td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td><td>10</td> </tr> <tr> <td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td>4</td><td colspan="3">men</td> </tr> </table>	10	10	10	10	10	10	10	10	10	10	4	4	4	4	4	4	4	men			P1	This mark is given for a process to find out how many people were at the meeting		
10	10	10	10	10	10	10	10	10	10																
4	4	4	4	4	4	4	men																		
	$3 \times 4 = 12$ men at the meeting $12 + 28 = 40$ people overall	A1	This mark is given for the correct answer only																						

Question 12 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	Peas: $24 \times \frac{60}{360} = 144^\circ$	M1	This mark is given for a method to find the angles to be drawn for each of the sectors in the pie chart
	Carrots: $16 \times \frac{60}{360} = 96^\circ$	C1	This mark is given for all three angles calculated correctly
	Peas: $20 \times \frac{60}{360} = 120^\circ$		
		C1	This mark is given for a fully correct pie chart properly labelled

Question 13 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$45 \times 1.20 = 54$ $34 \times 1.50 = 51$	P1	This mark is given for a process to work out the money made selling books and candles
	$150 - 54 - 51 = 45$	P1	This mark is given for a process to work out the money made from selling calendars
	$45 \div 0.9$	P1	This mark is given for a process to find out the number of calendars sold
	50	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)	$1 - 0.2 - 0.4 - 0.1$ $= 0.3$	B1	This mark is given for the correct answer only
(b)	4	B1	This mark is given for the correct answer only
(c)	0.2×60	M1	This mark is given for a method to work out an estimate
	12	A1	This mark is given for the correct answer only

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3 \times 5 = 15$	P1	This mark is given for a process to find out which multiple will have both a star and a circle drawn on
	$100 \div 15 = 6.66\dots$	P1	This mark is given for a process to find out how many cards up to 100 have both a star and a circle drawn on
	6 (whole cards)	A1	This mark is given for the correct answer only

Question 16 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	450 : 15	M1	This mark is given for writing down an unsimplified ratio
	30 : 1	A1	This mark is given for dividing both sides by 15 for the correct answer

Question 17 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$2(2x + 1), 2(x + 2), 4x$	M1	This mark is given for a method to list the dimensions of the pentagon
	$2(2x + 1) + 2(x + 2) + 4x = 18$	M1	This mark is given for a method to add the dimensions of the pentagon together
	$4x + 2 + 2x + 4 + 4x = 18$ $10x + 6 = 18$	C1	This mark is given for collecting and rearranging terms to show $10x + 6 = 18$ as required
(b)	$10x + 6 = 18$ $10x = 12$	M1	This mark is given for a method to find the value of x
	$x = 1.2$	A1	This mark is given for a correct answer only

Question 18 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$14200 \times 1.2 = 17040$	P1	This mark is given for a process to find the cost of the boat with VAT included
	$17040 - 5000 = 12040$	P1	This mark is given for a process to find the amount to be paid after the deposit
	$12040 \div 10$	P1	This mark is given for a process to find the amount of one payment
	1204	A1	This mark is given for the correct answer only

Question 19 (Total 7 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	<p>A number line is shown with integers from -5 to 5. An arrow points to the left, starting from the point 4. There is an unshaded circle at the point 4.</p>	B2	These marks are given for a line with an unshaded circle at 4 and arrow beyond -5 (B1 is given for two of these aspects seen)
(b)	4, 5, 6, 7	B2	These marks are given for all four numbers (B1 is given for 2 or 3 correct values)
(c)	$3x \geq x + 12$	M1	This mark is given for subtracting 5 from both sides of the inequality
	$2x \geq 12$	M1	This mark is given for a full method to solve the inequality
	$x \geq 6$	A1	This mark is given for a correct answer only

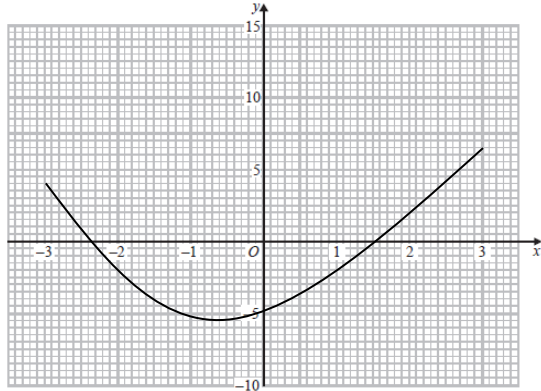
Question 20 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	7360	B1	This mark is given for the correct answer only
(b)	$\frac{5.7445626}{532.9}$ $= 0.1077981356$	B2	These marks are given for the correct answer only (B1 is given for 5.7445626 seen)

Question 21 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$883 - 245 = 638$	M1	This mark is given for a method to work out the increase in the insurance payment
	$\frac{638}{245} \times 100$	M1	This mark is given for a method to work out the percentage increase
	260.41	A1	This mark is given for a correct answer in the range 260 to 260.5

Question 22 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	2, -4, 2, 8	B2	These marks are given for all four values correct (B1 is given for 2 or 3 values correct)
(b)		M1	This mark is given for at least five points of (-3, 2), (-2, -2), (-1, -4), (0, -4), (1, -2), (2, 2) and (3, 8) plotted correctly
		A1	This mark is given for a fully correct curve drawn
(c)	-2.6 and 1.6	B1	This mark is given for two correct solutions read from the graph

Question 23 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$2 \div 40 \times 100$	B1	This mark is given for reading 2 students from the 20 to 24 bar
	5	A1	This mark is given for a correct answer only
(b)	11, 8, 13, 6 and 2	M1	This mark is given for frequencies of 11, 8, 13, 6 and 2 used
	$11 \times 2 + 8 \times 7 + 13 \times 12 + 6 \times 17 + 2 \times 22 = 380$	M1	This mark is given for totalling frequencies multiplied by correct mid-interval terms 2, 7, 12, 17 and 22
	$\frac{380}{40}$	M1	This mark is for dividing by the number of students
	9.5	C1	This mark is given for a correct estimate supported by correct working

Question 24 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{114}{475} \times 700$	P1	This mark is given for a process to work out how long Lara would take to ski 700 m
	= 168 seconds	P1	This mark is given for an answer in seconds
	= 2 minutes and 48 seconds	A1	This mark is given for correctly converting to minutes and seconds
(b)	Lara will take less time to complete the race	C1	This mark is given for a correct statement

Question 25 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{90}{(2+3)} = 18$ $A = 2 \times 18 = 36^\circ$ $B = 3 \times 18 = 54^\circ$	P1	This mark is given for a process to find values for angles A and B
	$\cos 36^\circ = 0.809$	P1	This mark is given for writing a value for $\cos A$
	$AB = \frac{14}{\cos A} = \frac{14}{0.809}$	P1	This mark is given for a process to find the length AB
	17.3	A1	This mark is given for the correct answer in the range 17.3 to 17.4

Question 26 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$6n - 1$	M1	This mark is given for $6n + k$, where $k \neq -1$
		A1	This mark is given for the correct answer only