

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

November 2019 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
<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
	$-7, -4, -2, 1, 8$	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
	8000	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
	23	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
	4.2	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
	$6 \times 6 \times 6 \times 6 \times 6 = 7776$	B1	This mark is given for the correct answer only

Question 6 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$14 \times 15 = 210$	P1	This mark is given for a process to work out the number of seats in the cinema
	$\frac{1274}{6.50} = 196$	P1	This mark is given for a process to work out how many tickets were sold
	$210 - 196 = 14$	A1	This mark is given for finding out how many tickets were not sold

Question 7 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$20 - 7 = 13$	M1	This mark is given for a method to find out how many sweets Harry now has
	$\frac{13}{20}$	A1	This mark is given for the correct answer only

Question 8 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$6 \times 8 - 5 = 43$	B1	This mark is given for the correct answer only
(b)	$17 + 13 \div 3 = 10$ or $17 + 13 - 20 = 10$	B1	This mark is given for a correct answer of $\div 3$ or -20

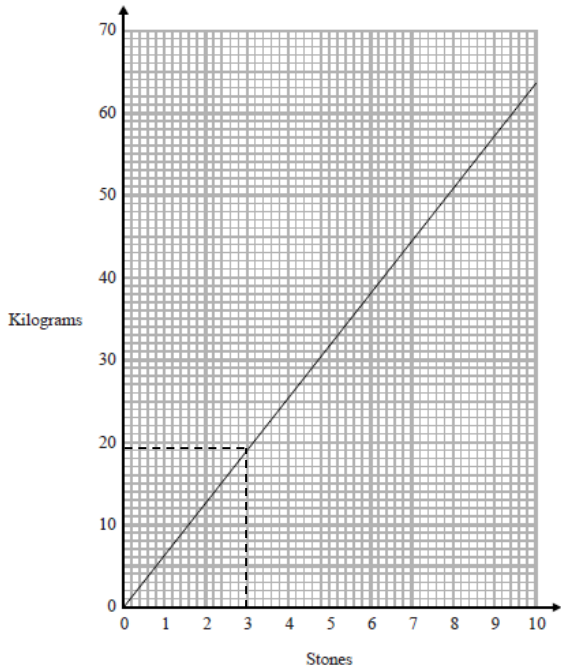
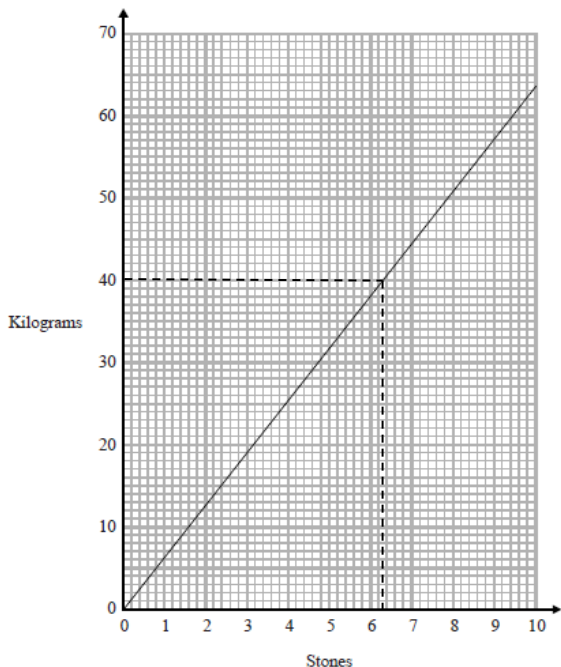
Question 9 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	3 4 4 6 8 9	M1	This mark is given for a method to list the numbers in order
	$\frac{4+6}{2} = 5$	A1	This mark is given for the correct answer only
(b)	There are two odd numbers (3 and 9) in the list of 6 numbers	B1	This mark is given for identifying either that there are 2 odd numbers or 6 numbers in total
	$\frac{2}{6}$	B1	This mark is given for the correct answer only (or an equivalent fraction)
(c)	3	P1	This mark is given for deducing that (at least) one missing number must be 3 to be the mode
	$\frac{3+3+8+5+x}{5} = 5$ $3+3+8+5+x = 25$ $x = 25 - 19 = 6$	A1	This mark is given for finding the other missing number

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{8.40}{0.024} = 350$	P1	This mark is given for a method to find out how many minutes Jon's car was parked
	10 45 + 350 minutes = 10 45 + 5 50	P1	This mark is given for a process to find what time Jon drove out the car park
	16 35	A1	This mark is given for a correct answer only (accept 4.35 p.m.)

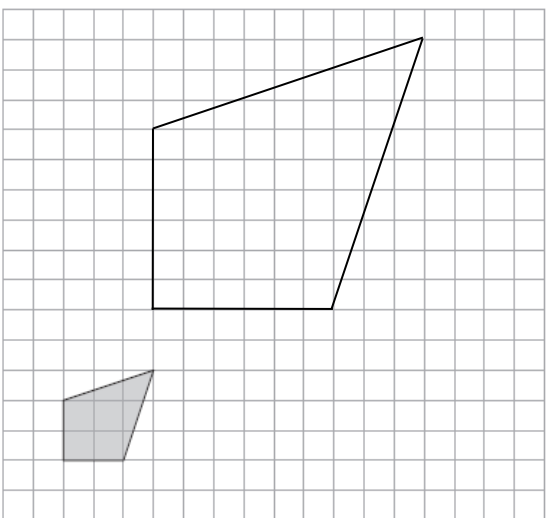
Question 11 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	 <p>3 stones = 19 kilograms</p>	B1	This mark is given for the correct answer only
(b)	 <p>40 kilograms = 6.3 stones</p>	M1	This mark is given for reading off an appropriate conversion to use to find the conversion for 80 kg
	80 kilograms = 12.6 stones		This mark is given for a correct answer only (in the range 12.4 to 12.8)

Question 12 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{3}{5} = \frac{6}{10}$	P1	This mark is given for a process to find a common denominator for the two fractions
	$\frac{\frac{1}{2}(1+6)}{10} = \frac{3.5}{10} = \frac{7}{20}$	P1	This mark is given for correctly finding the number which is halfway between the two fractions (accept 0.35 or any equivalent fraction)

Question 13 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
		B2	These marks are given for a correct enlargement (B1 is given for any two sides correct or a correct enlargement with scale factor other than 1 or 3)
		A1	This mark is given for the correct answer only

Question 14 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	1st offer: $2 \times 20 = 40$ litres for £3.50 2nd offer: $3 \times 40 = 120$ litres for £9.00	P1	This mark is given for a process to work out the total cost of each offer
	1st offer equates to 120 litres for £10.50	P1	This mark is given for a process to compare the two offers
	The 40 litre bag is better value for money	C1	This mark is given for a correct conclusion stated supported by correct working

Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$19.2 \text{ m} = 1920 \text{ cm}$	M1	This mark is given for a method to find the length of the plane in cm
	$\frac{1920}{24}$	M1	This mark is given for a method to find the length of the model
	80		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
	$4500 \times \frac{1.8}{100} = 81$	M1	This mark is given for a method to find the interest paid after one year
	$81 \times 3 = 243$	A1	This mark is given for the correct answer only

Question 17 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$ADB = 64$ Base angles of a isosceles triangle are equal	B1	This mark is given for a finding the size of the angle ADB
	$BDC = x$ $64 + 64 + 2x = 180$	M1	This mark is given for a method to find the value of x
	Base angles of a isosceles triangle are equal Angles in a triangle add up to 180	C1	This mark is given for correct reasons given for each stage of reasoning
	$180 - 128 = 2x$ $2x = 52$ $x = 26$	A1	This mark is given for the correct answer only

Question 18 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Ben's age = n Chloe's age = $2n$ Dan's age = $n - 5$	M1	This mark is given for a method to find algebraic expressions for the ages of Ben, Chloe and Dan
	$T = n + 2n + n - 5$	M1	This mark is given for method to find an algebraic expression for T
	$T = 4n - 5$	A1	This mark is given for the correct answer only
(b)	$5m - 3m = 2m$	C1	This mark is given for a tick next to the correct identity

Question 19 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$500 \div 175 = 2.857\dots$ $300 \div 75 = 4$ $625 \div 250 = 2.5$	P1	These marks is given for a process to find the multiples of 16 biscuits which can be made with each ingredient
	2.5×16	P1	This mark is given for a process to find the greatest number of biscuits Anna can make
	40	A1	This mark is given for the correct answer only

Question 20 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$H = (4 \times 110) + 12$	M1	This mark is given for a method to use the formula to find an estimate of the height of the building
	452	A1	This mark is given for a correct estimate of the height of the building
	$\frac{452 - 442}{442} \times 100 = 2.26\dots(\%)$	M1	This mark is given for a method to find the percentage difference between the estimate and the real height
	The difference between the estimate and the real height is less than 5%	A1	This mark is given for a correct conclusion supported by correct working

Question 21 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	<p>For example:</p> <p>There is no frequency label</p> <p>The y-axis is not labelled</p> <p>The polygon should not be closed</p> <p>The polygon should not have a line at the bottom</p> <p>The first and last points should not be connected</p> <p>The point (15, 6) has been plotted incorrectly</p> <p>The point (15, 6) has been plotted at (15, 8)</p>	C2	<p>These marks are given for two correct statements</p> <p>(C1 is given for one correct statement)</p>

Question 22 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$127.5 \leq \text{length} < 128.5$	B1	This mark is given for 127.5 in the correct position
		B1	This mark is given for 128.5 in the correct position

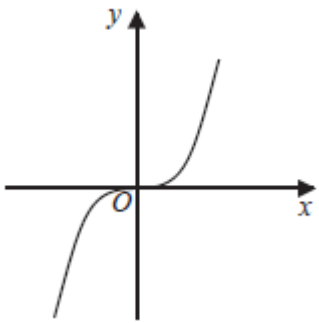
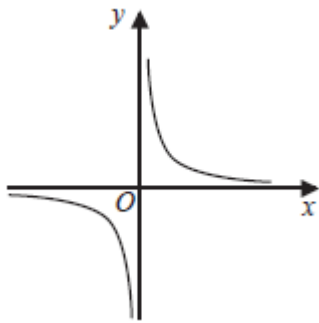
Question 23 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{240}{(3+7)} \times 3 = 72$	P1	This mark is given for a process to find out how many stamps Tom originally had
	$\frac{240}{(3+5)} \times 3 = 90$	P1	This mark is given for a process to find out how many stamps Tom had after buying some from Adam
	$90 - 72$	P1	This mark is given for a process to find how many stamps Tom bought from Adam
	18	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
(i)	$\frac{17}{50} \times 700$	M1	This mark is given for a process to find out how many bags Stan should order
	238	A1	This mark is given for a correct answer only
(ii)	<p>For example:</p> <p>The sample is representative, otherwise the answer might be wrong</p> <p>The sample is random, otherwise the answer might be different</p> <p>The 50 people sampled are from the 700 in the fitness club, otherwise the answer might be inaccurate</p> <p>17 out of every 50 people want a sports bag, otherwise the answer might be wrong</p>		This mark is given for a valid assumption and an explanation

Question 25 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	<p>F</p>  <p>A Cartesian coordinate system with x and y axes. The origin is labeled 'O'. A curve representing the function y = x^3 is plotted, passing through the origin and extending from the third quadrant to the first quadrant.</p>	P1	This mark is given for identifying the correct graph for the equation $y = x^3$
(b)	<p>D</p>  <p>A Cartesian coordinate system with x and y axes. The origin is labeled 'O'. A graph representing the function y = 1/x is plotted, consisting of two hyperbolic branches in the first and third quadrants, with the x-axis and y-axis as asymptotes.</p>	P1	This mark is given for identifying the correct graph for the equation $y = \frac{1}{x}$

Question 26 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	The terms of $2n^2 - 1$ are 1, 7, 17, 31, 49...	M1	This mark is given for a method to generate at least three terms of the first sequence
	The terms of $40 - n^2$ are 39, 36, 31, 24, 15...	M1	This mark is given for a method to generate at least three terms of the second sequence
	31	A1	This mark is given for a correctly identifying the only number in both sequence

Question 27 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{3.42}{7.5} \times \frac{10^{-7}}{10^{-6}} = 0.456 \times 10^{-1}$	M1	This mark is given for a method to find an answer in standard form
	4.56×10^{-2}	A1	This mark is given for the correct answer only

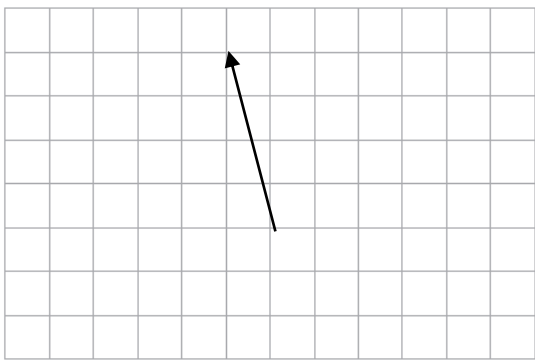
Question 28 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Ali's company will use $\frac{720}{40} = 18$ workers Hayley's company will use $\frac{720}{30} = 24$ workers	P1	This mark is given for a process to find the number of workers needed by each company
	$24 - 18$	P1	This mark is given for a process find out how many more workers Hayley's company will need
	6	A1	This mark is given for the correct answer only

Question 29 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(2 \times 6 \times 8) + (2 \times 6 \times 18) + (2 \times 8 \times 18) = 96 + 216 + 288 \text{ cm}^2$	P1	This mark is given for a process to find the area of at least three faces of the cuboid
	600 cm^2	P1	This mark is given for a complete process to find the surface area of the cuboid
	$\frac{600}{6} = 100 \text{ cm}^2$ $\sqrt{100} = 10 \text{ cm}$	P1	This mark is given for a process to find the length of one side of the cube
	Volume of cuboid = $6 \times 8 \times 18 = 864 \text{ cm}^3$ Volume of cube = $10 \times 10 \times 10 = 1000 \text{ cm}^3$	P1	This mark is given for a process to find the volumes of the cube and the cuboid
	Volumes are different so Janet is not correct	A1	This mark is given for a correct conclusion supported by correct working

Question 30 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$2\mathbf{b} = \begin{pmatrix} 2 \times 3 \\ 2 \times -1 \end{pmatrix} = \begin{pmatrix} 6 \\ -2 \end{pmatrix}$	M1	This mark is given for a method to find the vector representing $2\mathbf{b}$
	$\mathbf{a} - 2\mathbf{b} = \begin{pmatrix} 5 - 6 \\ 2 - -2 \end{pmatrix} = \begin{pmatrix} -1 \\ 4 \end{pmatrix}$	M1	This mark is given for a method to find the vector representing $\mathbf{a} - 2\mathbf{b}$
		A1	This mark is given for a correctly drawn vector on the diagram