

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

Set 1 Summer 2023 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
	5917	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
	70	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
	$4q$	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
	$4 \times 1000 = 4000$	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
	-3, -2, 1, 4, 5	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)	For example: $6 + 3 + 1 + 1 + 3 + 1 + 2 + 3 = 20$	B1	This mark is given for the correct answer only
(b)	For example: $(2 \times 6) + (2 \times 1) + (1 \times 1) = 15$	B1	This mark is given for the correct answer only

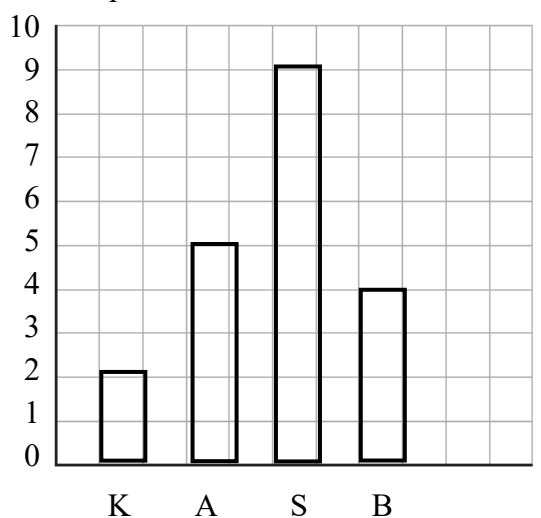
Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	unlikely	C1	This mark is given for the correct answer only
(b)	impossible	C1	This mark is given for the correct answer only
(c)	$1 - 0.2 = 0.8$	B1	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)	trapezium	C1	This mark is given for the correct answer only
(b)	cube	C1	This mark is given for the correct answer only

Question 9 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{2 + 5 + 9 + 4}{4} =$	M1	This mark is given for a method to find the mean number of films watched
	5	A1	This mark is given for the correct answer only
(b)	$9 - 2 = 7$	B1	This mark is given for the correct answer only
(c)	For example: 	B1	This mark is given for correct labels for Kim, Ali, Sam and Belle or a linear scale
		M1	This mark is given for at least two correct bars
		A1	This mark is given for a fully correct bar chart with labels

Question 10 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	2 hour 45 minutes = 165 minutes or 80 minutes = 1 hour 20 minutes	P1	This mark is given for a process to make a time conversion
	165 + 35 + 80 = 280 minutes or 2 45 + 0 35 + 1 20 = 4 hours 40 minutes	P1	This mark is given for a process to add at least two times
	07 30 + 280 = 12 10 or 07 30 + 4 40 = 12 10	P1	This mark is given for a process to find the time Wendy gets to the train station
	No, Wendy does not get to the train station before noon	C1	This mark is given for a valid conclusion supported by correct working

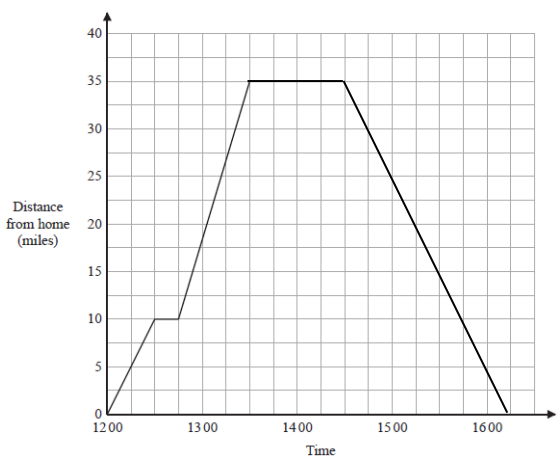
Question 11 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3x + 11 = 40$	P1	This mark is given for a process to represent the problem algebraically
	$3x = 51$	P1	This mark is given for a process to solve the equation formed
	$(x =) 17$	A1	This mark is given for the correct answer only

Question 12 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Merit	B1	This mark is given for the correct answer only
(b)	For example: $150 \div 30 = 5$ or $360 \times 30 = 10800$	M1	This mark is given for a method to work with proportion
	$\frac{360}{5}$ or $\frac{360}{150} \times 30$ or $\frac{10800}{150}$	M1	This mark is given for a complete method to find the total number of students
	72	A1	This mark is given for the correct answer only

Question 13 (Total 5 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)(i)	$12\ 30 - 12\ 00 = 30$ (minutes)	B1	This mark is given for the correct answer only
(a)(ii)	10 (miles)	B1	This mark is given for the correct answer only
(b)		M1	This mark is given for a line drawn from (13 30, 35) to (14 30, 35) or a line drawn from a point on $y = 35$ to 1615 on the x-axis
		A1	This mark is given for a fully correct graph
(c)	$\frac{35}{1.75} = 20$ (miles per hour)	B1	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
	$\frac{7000}{280} = 25$	M1	This mark is given for a method to find the cost of an exercise book
	$\frac{11000}{320} = 34.375$	M1	This mark is given for a method to find the cost of a pen
	$34.375 - 25 = 9.375$	M1	This mark is given for a method to find the difference between the cost of an exercise book and the cost of a pen
	9.4	A1	This mark is given for the correct answer (given to 1 decimal place)

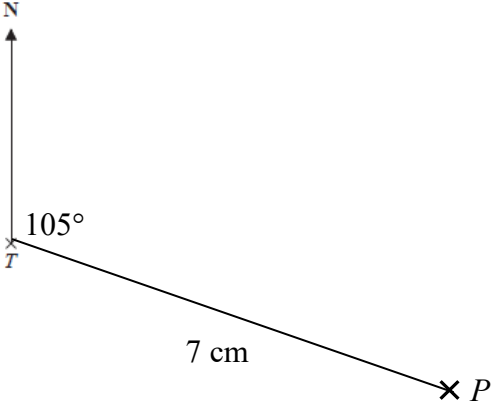
Question 15 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{42 \times 3}{2}$ <p>or</p> $42 \times \frac{3}{2} = 63$	M1	This mark is given for a method to find the number of beads in the box or This mark is given for a method to find the number of blue beads in the box
	$42 \times 2\frac{1}{2} = 105$ <p>or</p> $42 + 63 = 105$	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
	Rotation 90° clockwise Centre (0, 0)	B2	These marks are given for the three components of the transformation stated (B1 is given for two components stated)

Question 17 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	35 km = 7 cm on map 	B1	This mark is given for a the point <i>R</i> from <i>T</i> drawn at a distance within the range 6.8 to 7.2 cm
		B1	This mark is given for a the point <i>R</i> from <i>T</i> drawn with a bearing in the range 103° to 107°

Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$15x - 35 = 40$ or $3x - 7 = \frac{40}{5}$	M1	This mark is given for a correct first step of a method to find a value for x
	$15x = 75$ or $3x = 15$	M1	This mark is given for a complete method to find a value for x
	$x = 5$	A1	This mark is given for the correct answer only

Question 19 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{700}{4} = 175$ or $700 = \frac{5000 \times 4 \times y}{100}$	P1	This mark is given for the first step of a process to find the value of y
	$\frac{175}{5000} = 0.035$ or $y = \frac{700 \times 100}{5000 \times 4}$	P1	This mark is given for a complete process to find the value of y
	3.5	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
(a)	$k^{(3 \times 4)} = k^{12}$	M1	This mark is given for the correct answer only
(b)	$y^{(6+9)} = y^{15}$	A1	This mark is given for the correct answer only
(c)	$5m^4 + 10m^3$	B2	These marks are given for a fully correct answer (B1 is given for $m^4 + 2m^4$ or $5m^4$ or $10m^3$ seen)

Question 21 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$550 \times 0.76 = 418$	P1	This mark is given for a process to find the number of people will eat sandwiches
	$418 \times 3 = 1254$	P1	This mark is given for a process to find the number of sandwiches that will be eaten
	$1254 \times 2 = 2508$	P1	This mark is given for a process to find the number of slices of bread that will be needed
	2500	A1	This mark is given for the correct answer given to the nearest hundred slices
(b)	For example: The amount will need to be less Jenny will need 2244 slices Jenny will need 264 fewer slices	C1	This mark is given for a valid statement

Question 22 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$ACD = 130$ $ACB = 180^\circ - 130 = 50$	M1	This mark is given for a method to find angle ACB
	Corresponding angles are equal Angles on a straight line add to 180	C1	This mark is given for correct reasons stated
	$ABC = 180 - 100 = 80$ Angles on a straight line add to 180	M1	This mark is given for a method to find angle ABC (with reason given)
	$CAB = 180 - 80 - 50 = 50$	M1	This mark is given for a method to find angle CAB
	Triangle ABC has two base angles of 50 and so is isosceles	C1	This mark is given for a full complete explanation supported by correct working

Question 23 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{9 \times 24}{15}$	P1	This mark is given for the start of a process to use inverse proportion
	14.4	A1	This mark is given for a correct answer only (accept 14 hours 24 minutes)

Question 24 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$3^2 \times 5 = 45$	B1	This mark is given for the correct answer only
(b)	2^3 or 3^5 or 5^3 seen	M1	This mark is given for a method to find the lowest common multiple (LCM)
	$2^3 \times 3^5 \times 5^3 = 243\,000$	A1	This mark is given for a correct answer only

Question 25 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{98\,310}{8.7} = 11\,300$	P1	This mark is given for a start to a process to find the number of hours it takes for the sludge to flow
	$\frac{11\,300}{60 \times 60} = 3.13888\dots$	P1	This mark is given for complete process to find the number of days (using the number of seconds in an hour)
	3	A1	This mark is given for the correct answer (given to the nearest hour)

Question 26 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	(1, -3)	B1	This mark is given for the correct answer only
	0 or 2	B1	This mark is given for a correct answer only

Question 27 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3.5 = \frac{m}{216}$	M1	This mark is given a for a method to use density = mass \div volume, where m is the mass of the cube
	$m = 3.5 \times 216 = 756$	A1	This mark is given for the correct answer only

Question 28 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	For example: 2.5 : 75 or 25 : 750 or 2 500 : 75 000	M1	This mark is given for a method to find an equivalent ratio
	1 : 30	A1	This mark is given for the correct answer only
(b)	For example: 6125, 61.25, 612 500, 6.125	M1	This mark is given for writing numbers in the same format to allow comparison
	0.006 125 $\times 10^3$, 612 500 $\times 10^{-4}$, 6125, 6.125 $\times 10^5$	A1	This mark is given for a correct list only