GCSE Mathematics (1MA1) – Aiming for 4 Paper 3F

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
	1.3	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
	18	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
	7	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
	$\frac{35}{100}$	B1	This mark is given for a correct answer only (or equivalent)

Question 5 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Two from 1, 2, 3, 4, 6, 12	B1	This mark is given for any two correct factors

Question 6 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.8	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
	$35 \times 4 = 140$	M1	This mark is given for a method to find the number of nails Sinita needs
	$48 \times 3 = 144$	A1	This mark is given for a method to find the number of nails Sinita has
	For example: Yes, Sinita has 4 more nails than she needs Yes, Sinita can make one more frame	C1	This mark is given for a valid conclusion supported by correct working

Question 8 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Apples: $86 + 75 + 92 = 253$ Oranges: $68 + 80 + 76 = 224$	P1	This mark is given for a process to work out the number of apples and oranges sold
	$253 – 224$	P1	This mark is given for a process to work out the difference between the number of apples and oranges sold
	29	A1	This mark is given for the correct answer only

Question 9 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$121 – 19 = 102$	B1	This mark is given for the correct answer only
(b)	$\frac{143+21+45+19}{4} = \frac{328}{4} = 82$	A1	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
	2000	B1	This mark is given for a correct answer only

Question 11 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{40.15}{8.03}$	M1	This mark is given for either 40.15 or 8.03 seen
	5	A1	This mark is given for the correct answer only

Question 12 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.408, 0.41, 0.46, 0.5	B1	This mark is given for the correct answer only

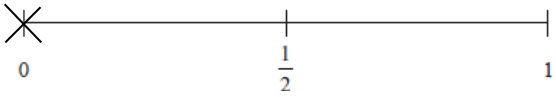
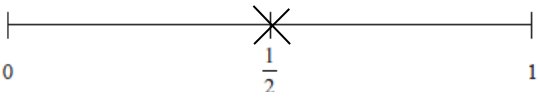
Question 13 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{1}{4} \times 208 = 52$ large bars $52 \times £1 = £52$	P1	This mark is given for a process to work out the total value of the large bars
	$\frac{3}{4} \times 208$ (or $208 - 52$) $= 156$ small bars $156 \times £0.6 = £93.60$	P1	This mark is given for a process to work out the total value of the small bars
	$52 + 93.60 = 145.60$	A1	This mark is given for the correct answer only

Question 14 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{60}{1000}$	M1	This mark is given for a method to find a correct fraction
	$\frac{3}{50}$	A1	This mark is given for the correct answer only

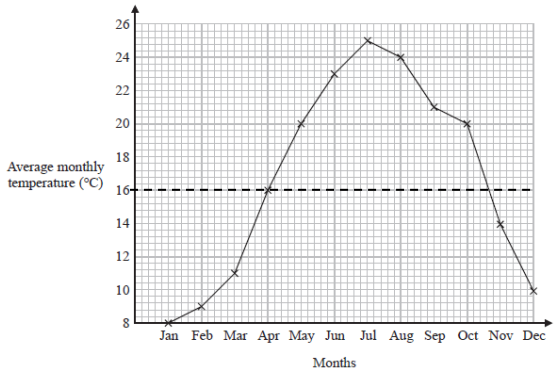
Question 15 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)		B1	This mark is given for a cross placed at 0
(b)		B1	This mark is given for a cross placed at $\frac{1}{2}$
(c)	$\frac{5}{8}$	M1	This mark is given for $\frac{5}{a}$ where $a > 5$ or $\frac{b}{8}$ where $b < 8$
		A1	This mark is given for the correct answer only (or equivalent)

Question 16 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$8 \times 5 \times 4$	M1	This mark is given for a method to find the volume of the cuboid
	160	P1	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
(a)	 6 (months)	B1	This mark is given for the correct answer only
(b)	May and October	B1	This mark is given for the correct answers only

Question 18 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$6m$	B1	This mark is given for the correct answer only

Question 19 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Amol has n sweets Gemma has $6n$ sweets Harry has $3n$ sweets	M1	This mark is given for to represent the number of sweets each person has algebraically
	1 : 6 : 3	A1	This mark is given for the correct answer only

Question 20 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	28, 33	B1	This mark is given for the correct answer only
(b)	For example: All terms in the sequence end in 3 or 8 48 and 53 are two consecutive terms in the sequence $5n - 2 = 50$ would mean n is not a whole number	C1	This mark is given for a correct explanation

Question 21 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{15}{3} \times 36 = £180$	P1	This mark is given for a process to find the cost of 15 rolls from Chic Decor
	$70 \times (15 \div 5) \times 0.12 = £25.20$	P1	This mark is given for a process to find the discount available at Style Papers
	$(3 \times 70) - 25.20 = £184.80$	P1	This mark is given for a process to find the cost of 15 rolls from Style Papers
	Jo should by the wallpaper from Chic Decor	C1	This mark is given for a valid statement supported by correct working

Question 22 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(i)	For example: 11, 10 or 9, 6	B1	This mark is given for a two correct terms stated
(ii)	For example: The difference goes down by 1 each time Take away 4, then 3, then 2, then 1 Take away 4, then 3, then 4, then 3…	C1	This mark is given for a correct explanation stated

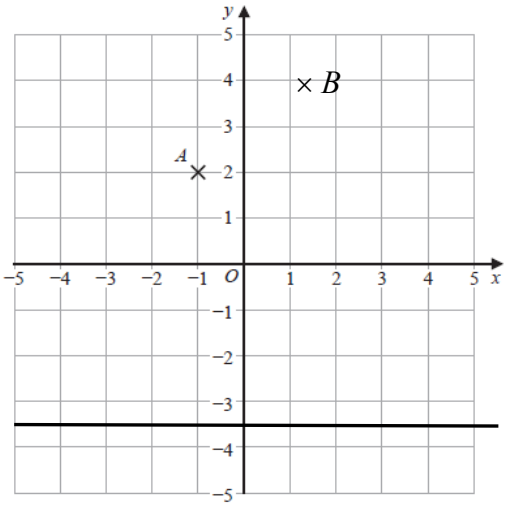
Question 23 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$400 \times \frac{3}{8} = 150$	P1	This mark is given for a process to find the number of red counters
	$400 - 150 - 82 = 168$	P1	This mark is given for a process to find the number of green counters
	$\frac{168}{400} \times 100 =$	P1	This mark is given for a process to find the number of green counters as a percentage of the total
	42	A1	This mark is given for the correct answer only

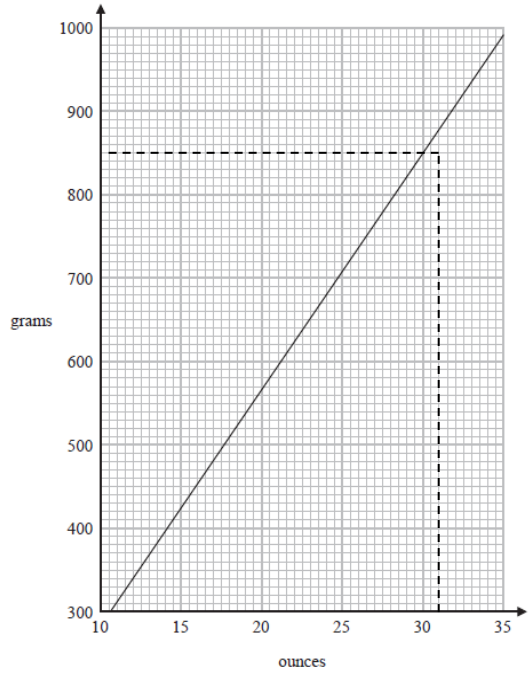
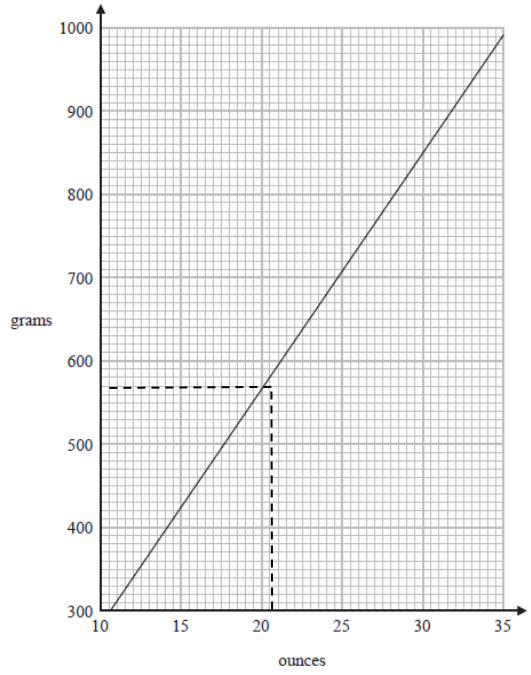
Question 24 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: Rob should have divided by 8	A1	This mark is given for a valid description of the error in Rob's working

Question 25 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	(–1, 2)	B1	This mark is given for the correct answer only
(b)		B1	This mark is given for the correct point *B* marked on the grid
(c)		B1	This mark is given for the correct line marked on the grid

Question 26 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	 30	B1	This mark is given for the correct answer only
(b)	 20 ounces = 570 g 80 ounces = 2280	M1	This mark is given for a method to read off the graph at a factor of 80
		A1	This mark is given for the correct answer in the range 2238 to 2296

Question 27 (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)	9	B1	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)	$12 - 6x$	B1	This mark is given for the correct answer only
(b)	$3y = 12 \times 4 = 48 \qquad y = \frac{48}{3}$	M1	This mark is given for a method to find the value of y
	16	A1	This mark is given for the correct answer only
(c)	$2(2p + 3)$	B1	This mark is given for the correct answer only

Question 29 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	<table><tr><th></th><th>F</th><th>S</th><th>G</th><th>Total</th></tr><tr><td>Girls</td><td></td><td></td><td>18</td><td>110</td></tr><tr><td>Boys</td><td>60</td><td></td><td></td><td>90</td></tr><tr><td>Total</td><td>104</td><td>70</td><td></td><td>200</td></tr></table>	P1	This mark is given for a process to add the information given into a two-way table
	<table><tr><th></th><th>F</th><th>S</th><th>G</th><th>Total</th></tr><tr><td>Girls</td><td></td><td></td><td>18</td><td>110</td></tr><tr><td>Boys</td><td>60</td><td>22</td><td>8</td><td>90</td></tr><tr><td>Total</td><td>104</td><td>70</td><td>26</td><td>200</td></tr></table> $200 - 104 - 70 = 26$ $26 - 18 = 8$	P1	This mark is given for a process to use the information in the table to find out how many students chose German
	$90 - 60 - 8 = 22$	A1	This mark is given for the correct answer only

Question 30 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	1 kg of carrots = 1.74 ÷ 3 = 0.58	P1	This mark is given for a process to find the cost of 1 kg of carrots
	2.5 kg of onions = 2.36 – (2 × 0.58) = 1.20	P1	This mark is given for a process to find the cost of 2.5 kg of onions
	I kg of onions = 1.20 ÷ 2.5 = 0.48	P1	This mark is given for a process to find the cost of 1 kg of onions
	4 kg of onions = 4 × 0.48 = 1.92	P1	This mark is given for a process to find the cost of 4 kg of onions
	Yes, Stuart has enough money to buy 4 kg of onions	C1	This mark is give for a valid statement supported by correct working

Question 31 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	87 600	M1	This mark is given for a method to find height × frequency
(b)	$\frac{33.81}{2.5}$	M1	This mark is given for 33.81 or 2.5 seen
	13.524	A1	This mark is given for the correct answer only

Question 32 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	For 25 scones: 2.5 × 80 = 200g butter 2.5 × 350 = 875g self-raising flour 2.5 × 30 = 75g sugar 2.5 × 2 = 5 eggs	P1	This mark is given for a process to find the amount of at least one ingredient needed for 25 scones
		P1	This mark is given for a process to find the amount of at least three ingredients needed for 25 scones
	200 – 100 = 100g butter 1 kg > 875g self-raising flour, so no more required 75 – 50 = 25g sugar 5 – 4 = 1 egg	P1	This mark is given for a process to find the extra amounts of the ingredients needed needed
		C1	This mark is given for a fully correct answer showing the correct amounts of butter, sugar and eggs required

Question 33 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{20}{5} = 4$	M1	This mark is given for a method to find a ratio of the lengths of the triangles
	$4 \times 4 = 16$	A1	This mark is given for the correct answer only
(b)	$\frac{22}{4}$	M1	This mark is given for a method to find the length of AB
	5.5	A1	This mark is given for the correct answer only

Question 34 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	19	B1	This mark is given for the correct answer only

Aiming for 4 – Paper 3F (Set 5)					Edexcel averages: mean scores of students who achieved grade:						
Qn	**Skill tested**	**Mean score**	**Max score**	**Mean %**	**ALL**	**5**	**4**	**3**	**2**	**1**	**U**
1	Roots and powers	0.92	1	92	0.92	1.00	0.99	0.97	0.91	0.76	0.47
2	Primes, factors, multiples	0.97	1	97	0.97	0.99	0.99	0.98	0.96	0.89	0.66
3	Calculate exactly with fractions	0.87	1	87	0.87	0.99	0.98	0.95	0.84	0.59	0.28
4	Percentages and problems involving percentage change	0.87	1	87	0.87	0.98	0.97	0.93	0.83	0.61	0.27
5	Primes, factors, multiples	0.91	1	91	0.91	0.98	0.97	0.95	0.90	0.77	0.49
6	Conversion between fractions, decimals and percentages	0.88	1	88	0.88	0.99	0.96	0.90	0.81	0.62	0.33
7	Apply four operations	2.63	3	88	2.63	2.96	2.91	2.81	2.57	1.88	0.61
8	Apply four operations	2.62	3	87	2.62	2.92	2.86	2.76	2.56	2.04	0.86
9	Measures of central tendency (median, mean, mode and modal class)	2.66	3	89	2.66	2.94	2.86	2.74	2.49	1.88	0.98
10	Apply four operations	0.91	1	91	0.91	0.96	0.95	0.93	0.88	0.76	0.49
11	Apply four operations	1.62	2	81	1.62	1.90	1.82	1.71	1.51	1.14	0.62
12	Order numbers	0.76	1	76	0.76	0.99	0.90	0.79	0.63	0.41	0.25
13	Apply four operations	2.35	3	78	2.35	2.66	2.69	2.52	2.00	0.96	0.41
14	One quantity as a fraction of another	1.39	2	70	1.39	1.89	1.78	1.54	1.09	0.57	0.21
15	Randomness, fairness and equally likely events	2.98	4	75	2.98	3.75	3.53	3.19	2.63	1.74	0.67
16	Volume cuboids and other right prisms (including cylinders)	1.44	2	72	1.44	1.95	1.76	1.47	1.18	0.84	0.44
17	Tables and line graphs for time series data	1.67	2	84	1.67	1.80	1.75	1.68	1.62	1.43	1.03
18	Simplify and manipulate algebraic expressions and fractions	0.81	1	81	0.81	0.93	0.87	0.82	0.77	0.67	0.50
19	Ratio notation, reduction to simplest form	1.40	2	70	1.40	1.91	1.74	1.49	1.08	0.59	0.24
20	Linear and non-linear sequences of diagrams and numbers	1.59	2	80	1.59	1.76	1.71	1.64	1.54	1.28	0.74
21	Percentages and problems involving percentage change	2.34	4	59	2.34	3.71	3.32	2.55	1.37	0.55	0.14
22	Linear and non-linear sequences of diagrams and numbers	1.51	2	76	1.51	1.67	1.66	1.55	1.40	1.06	0.57
23	Percentages and problems involving percentage change	2.08	4	52	2.08	3.75	3.26	2.17	0.86	0.20	0.05
24	Ratio in real context	0.63	1	63	0.63	0.90	0.81	0.67	0.47	0.26	0.08
25	Graphs and equations of lines	2.20	3	73	2.20	2.70	2.41	2.23	2.04	1.71	1.21
26	Graphs of functions in real contexts	1.85	3	62	1.85	2.77	2.41	1.91	1.34	0.85	0.52
27	Properties of 3D shapes	1.44	2	72	1.44	1.72	1.59	1.46	1.33	1.12	0.73
28	Factorise expressions	2.12	4	53	2.12	3.71	3.16	2.21	1.10	0.34	0.06
29	Two way tables	1.91	3	64	1.91	2.74	2.37	2.00	1.46	0.92	0.46
30	Apply four operations	2.50	5	50	2.50	4.65	3.91	2.66	1.17	0.38	0.06
31	BIDMAS and inverse operations	2.07	3	69	2.07	2.62	2.30	2.11	1.90	1.50	0.94

32	Solve problems involving direct and inverse proportion	2.30	4	58	2.30	3.44	3.04	2.48	1.53	0.62	0.34
33	Relationships between lengths, areas and volumes in similar figures	1.77	4	44	1.77	3.79	2.96	1.81	0.78	0.22	0.07
34	Rounding; Inequality notation to specify error interval	0.56	1	56	0.56	0.72	0.67	0.59	0.45	0.29	0.17
		55.53	**80**	**69**	**55.53**	**74.14**	**67.86**	**58.17**	**45.00**	**30.45**	**15.95**

Suggested grade boundaries

Grade	**5**	**4**	**3**	**2**	**1**
Mark	**71**	**63**	**52**	**38**	**23**