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

Student-friendly mark scheme

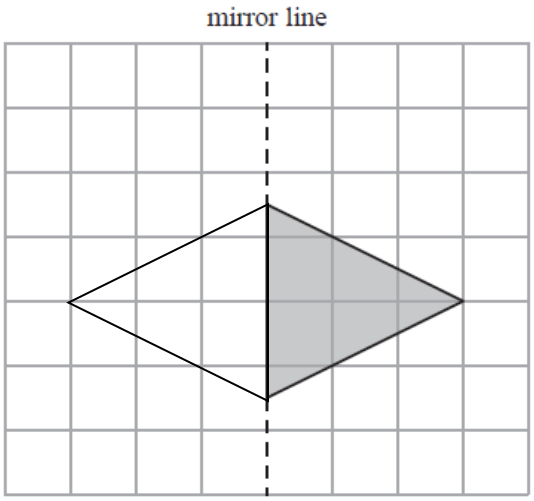
Please note that this mark scheme is not the one used by examiners for making scripts. It is intended more as a guide to good practice, indicating where marks are given for correct answers. As such, it doesn't show follow-through marks (marks that are awarded despite errors being made) or special cases.

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
		B1	This mark is given for the correct answer only

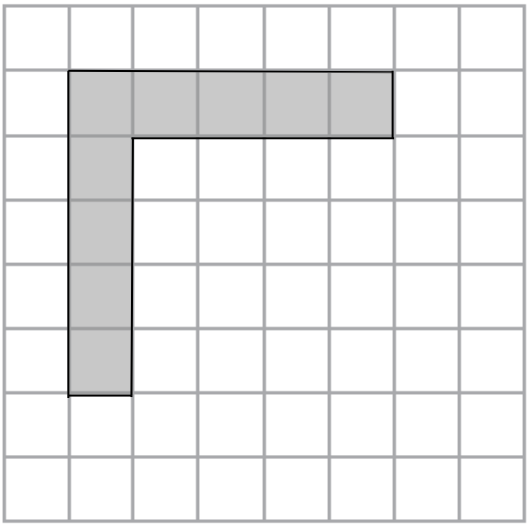
Question 2 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$3 \times 3 = 9$	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
	$20 \div 5 = 4$	B1	This mark is given for the correct answer only

Question 4 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)			This mark is given for the correct shape drawn
(b)	9 and 11	P1	This mark is given for two correct answers only

Question 5 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	6000	B1	This mark is given for the correct answer only

Question 6 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$20 – 6 = 14$	P1	This mark is given for a process to find the amount spent on candles
	$14 \div 2$	P1	This mark is given for a process to find the number of candles Simon buys
	7	A1	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
	$6 \times 4 = 24$	M1	This mark is given for a method to work out the value of y using a correct substitution
	$24 - 5 = 19$	A1	This mark is given for the correct answer only

Question 8 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$45\% = 0.45$ and $\frac{1}{2} = 0.50$ $45\%,\ \frac{1}{2},\ 0.55$	B1	This mark is given for the correct answer only

Question 9 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$2 \times 4 = 8$	B1	This mark is given for the correct answer only

Question 10 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	$\frac{4}{15}$	B1	This mark is given for a correct answer only (accept as a decimal or a percentage)
(b)	$1 - 0.3 = 0.7$	B1	This mark is given for a correct answer only (accept as a decimal or a percentage)

Question 11 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$25 \div 10 = 2.5$ or $40 \div 10 = 4$	M1	This mark is given for a method to find out how much sugar Mia needs
	$2.5 \times 40 = 100$ or $4 \times 25 = 100$	A1	This mark is given for the correct answer only

Question 12 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$240 \times 0.2 = 48$	M1	This mark is given for the first step in a method to find the increase
	$240 + 48$	M1	This mark is given for the second step in a method to find the increase
	288	A1	This mark is given for the correct answer only

Question 13 (Total 1 mark)

Part	Working an or answer examiner might expect to see	Mark	Notes
	10 or 12	B1	This mark is given for the correct answer only

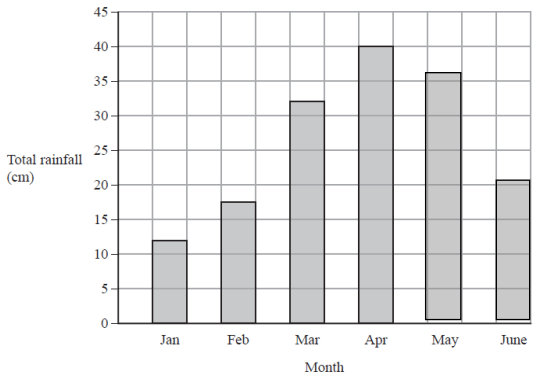
Question 14 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: $33 + (2 \times 24.50)$ or $15 + (2 \times 10)$ or $200 - 23$	P1	This mark is given for a start to the process of finding the cost of the trip
	$33 + (2 \times 24.50) = 82$ or $15 + (2 \times 10) = 35$	P1	This mark is given for a process to find the cost of the tickets or the cost of the meals
	$23 + 33 + (2 \times 24.50) + 15 + (2 \times 10) = 140$ or $23 + 82 + 35 = 140$	P1	This mark is given for a complete process to find the cost of the trip
	$200 - 140 = 60$	A1	This mark is given for the correct answer only

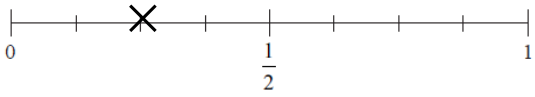
Question 15 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$-15 + 42$	M1	This mark is given for a method to find the highest temperature
	27	A1	This mark is given for the correct answer only

Question 16 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)		M1	This mark is given for one bar correct (for example, May plotted at 35 or June plotted at 20)
		A1	This mark is given for two bars correct (May plotted at 35 and June plotted at 20)
(b)	For example: Half a square is worth 2.5 It goes to 17.5	C1	This mark is given for a correct explanation

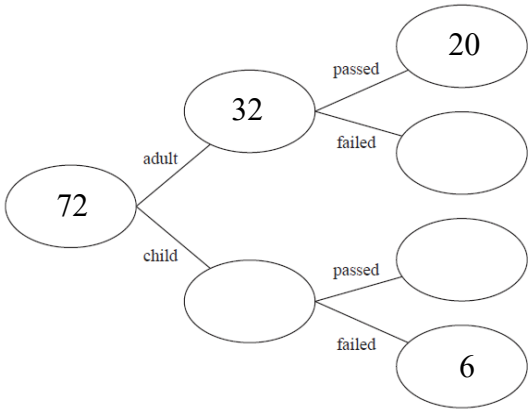
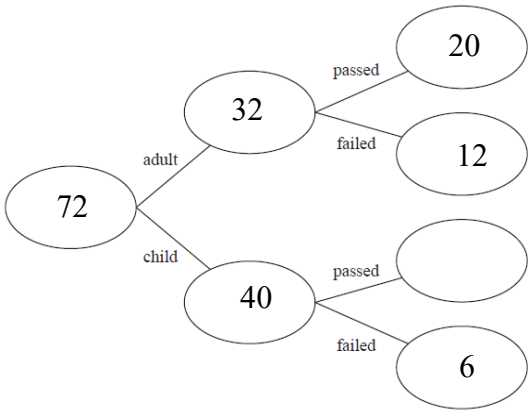
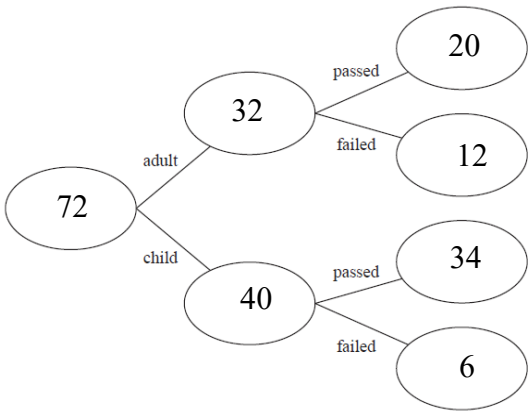
Question 17 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	A	B1	This mark is given for the correct answer only
(b)(i)		B1	This mark is given for the correct answer only
(b)(ii)	$\frac{1}{8}$	B1	This mark is given for the correct answer only

Question 18 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{3}{10}$	B1	This mark is given for the correct answer only

Question 19 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)		C1	This mark is given for correctly placing at least one of the given values in the diagram
		M1	This mark is given for adding 40 (from 72 – 32) or 12 (from 32 – 20) correctly on the diagram
		A1	This mark is given for a fully correct frequency tree
(b)	$\frac{12}{72} = \frac{1}{6}$	M1	This mark is given for a method to find the probability (for example, $\frac{a}{72}$ where $0 < a < 72$ or $\frac{12}{b}$ where $b > 12$ and b is an integer)
		A1	This mark is given for a correct answer only (or an equivalent fraction)

Question 20 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$23 \div 4 = 5.75$	M1	This mark is given for a method to find the greatest number of jars of coffee Michael can buy
	5	A1	This mark is given for the correct answer only
(b)	Michael is incorrect For example: $23 \div 2 = 11.5$, so Michael can buy 11 jars	C1	This mark is given for a valid answer support by correct reasoning

Question 21 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	1 | 7 9 2 | 5 5 6 7 7 7 8 9 3 | 3 7 7 4 | 5 7	B2	These marks are given for a fully correct ordered diagram (B1 is give for a correct unordered diagram or an ordered diagram with one error or omission)
	Key: 2 | 5 is 25	B1	This mark is given for a correct key

Question 22 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$4e$	B1	This mark is given for the correct answer only

Question 23 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	7	B1	This mark is given for the correct answer only
(b)	$4n = 24$ $n = 24 \div 4$	M1	This mark is given for a method to find the value of n
	6	A1	This mark is given for the correct answer only

Question 24 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{5}{12} + \frac{2}{12}$	M1	
	$\frac{7}{12}$	A1	This mark is given for a correct answer only (or an equivalent fraction)
(b)	$\frac{3 \times 5}{10 \times 8} = \frac{15}{80}$ or $\frac{3 \times 1}{2 \times 8}$	M1	This mark is given for a method to multiply fractions or a method to simplify the calculation
	$\frac{3}{16}$	A1	This mark is given for a correct and fully simplified answer only

Question 25 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{1}{6} \times 120$ minutes = 20 minutes	P1	This mark is given for a process to find how long Elena used the swimming pool for
	0.2×120 minutes = 24 minutes	P1	This mark is given for a process to find how long Elena used the gym for
	120 – 50 – 20 – 24	P1	This mark is given for a process to find how long Elena spent in the cafe
	26	A1	This mark is given for the correct answer only
(b)	No, she was 4 minutes late For example: 1.30 pm + 50 + 20 + 24 = 3.04 pm	C1	This mark is given for a valid answer supported by correct working

Question 26 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$40 \times 10 = 400$	B1	This mark is given for the correct answer only

Question 27 (Total 4 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	60	B1	This mark is given for the correct answer only
(b)	210 – 160 = 50	B1	This mark is given for the correct answer only
(c)	280 – 200 = 80 90 + 110 = 200	P1	This mark is given for a process to find the number of children and the total number of men and women from the graph
	80 : 200 (or equivalent, for example 8 : 20)	A1	This mark is given for a correct answer only

Question 28 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$1 - \frac{30}{100}$	M1	This mark is given for a method to find the probability the counter is **not** blue
	$\frac{70}{100}$	A1	This mark is given for a correct answer only
(b)	$30 \div 2 = 15$ $3 \times 15 =$	P1	This mark is given for a process to find the number of green counters
	45	A1	This mark is given for the correct answer only
(c)	Bradley is not correct For example: the total number of red and yellow counters is 25 which cannot be divided to give two equal whole numbers	C1	This mark is given for a valid answer supported by correct working

Question 29 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	100×2 or 90×2 or 100×1.63 or 100×1.5 or 90×1.5 or 92×1.5	M1	This mark is given for rounding one figure appropriately (for example rounding 92 to 90 or 100 or rounding 1.63 to 2 or 1.5)
	200 or 180 or 163 or 150 or 135 or 138	A1	This mark is given for a correct estimate only
(b)	$29.6 \times 32 = 2.96 \times 10 \times 3.2 \times 10$ $= 9.472 \times 100$ $= 947.2$	B1	This mark is given for a correct answer only

Question 30 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	15*tw*	B1	This mark is given for a correct answer only (might be 15*wt*)

Question 31 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$160 \div (3 + 7) = 16$	P1	This mark is given for the first step in a process to find the number of cars
	$16 \times 3 = 48$	P1	This mark is given for a full process to find the number of cars
	$48 \times \frac{1}{8} = 6$	P1	This mark is given for a process to find the number of cars that use electricity
	$48 \times 0.25 = 12$	P1	This mark is given for a process to find the number of cars that use diesel
	$48 - 6 - 12 = 30$	A1	This mark is given for the correct answer only

Question 32 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	For example: $250 \times 2 \rightarrow 125 \times 2 \rightarrow 25 \times 5 \rightarrow 5 \times 5$	M1	This mark is given for a complete method to find the prime factors (could be shown on a factor tree)
	$2 \times 2 \times 5 \times 5 \times 5$	M1	This mark is given for a method to find a complete factorisation
	$2^2 \times 5^3$	A1	This mark is given for the correct answer only

1MA1 – Aiming for 4 (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	Linear and non-linear sequences of diagrams and numbers	1.89	2	95	1.89	1.99	1.97	1.94	1.89	1.75	1.35
2	Transformations	0.92	1	92	0.92	0.99	0.98	0.95	0.90	0.80	0.60
3	Apply four operations	2.70	3	90	2.70	2.97	2.93	2.84	2.64	2.18	1.47
4	Roots and powers	0.92	1	92	0.92	0.97	0.97	0.94	0.89	0.77	0.69
5	BIDMAS and inverse operations	0.95	1	95	0.95	0.99	0.97	0.96	0.93	0.84	0.71
6	Apply four operations	0.88	1	88	0.88	0.97	0.96	0.92	0.86	0.71	0.45
7	Substitute values into formulae and expressions	1.53	2	77	1.53	1.97	1.91	1.75	1.35	0.66	0.24
8	Order numbers	0.76	1	76	0.76	0.98	0.94	0.85	0.66	0.38	0.19
9	Pictograms	0.92	1	92	0.92	0.95	0.94	0.93	0.92	0.89	0.76
10	Probabilities of an exhaustive set of outcomes	1.46	2	73	1.46	1.96	1.86	1.64	1.22	0.65	0.29
11	Solve problems involving direct and inverse proportion	1.52	2	76	1.52	1.94	1.85	1.66	1.33	0.87	0.45
12	Percentages and problems involving percentage change	1.93	3	64	1.93	2.91	2.74	2.24	1.24	0.42	0.16
13	Primes, factors, multiples	0.85	1	85	0.85	0.93	0.91	0.87	0.79	0.68	0.58
14	Apply four operations	3.45	4	86	3.45	3.79	3.63	3.51	3.30	2.90	2.45
15	Apply four operations	1.53	2	77	1.53	1.91	1.81	1.64	1.38	0.95	0.50
16	Bar charts	2.48	3	83	2.48	2.80	2.68	2.54	2.37	2.10	1.54
17	Probability outcomes	2.41	3	80	2.41	2.87	2.68	2.47	2.20	1.77	1.56
18	Terminating decimals and their corresponding fractions	0.80	1	80	0.80	0.95	0.89	0.82	0.73	0.64	0.52
19	Theoretical probability; appropriate language; 0-1 probability scale	3.83	5	77	3.83	4.54	4.37	4.12	3.66	2.63	1.24
20	Apply four operations	2.41	3	80	2.41	2.79	2.61	2.45	2.26	1.94	1.83
21	Stem and leaf diagrams	1.85	3	62	1.85	2.75	2.46	2.00	1.39	0.70	0.23
22	Simplify and manipulate expressions using laws of indices	0.73	1	73	0.73	0.90	0.81	0.73	0.66	0.61	0.51
23	Solve linear equations	1.93	3	64	1.93	2.82	2.36	2.02	1.52	1.16	1.10
24	Calculate exactly with fractions	2.28	4	57	2.28	3.65	3.13	2.33	1.52	0.89	0.51
25	Units of mass, length, time, money and other measures (including standard compound measures)	2.81	5	56	2.81	4.47	3.87	3.02	1.78	1.04	0.93
26	Change between standard units and compound units	0.67	1	67	0.67	0.87	0.77	0.67	0.59	0.49	0.32
27	Ratio in real context	2.45	4	61	2.45	3.53	3.03	2.53	1.95	1.48	1.30
28	Ratio in real context	2.80	5	56	2.80	4.39	3.74	2.96	1.91	1.29	1.02
29	Apply four operations	1.54	3	51	1.54	2.58	2.24	1.68	0.90	0.29	0.10
30	Algebraic manipulation	0.64	1	64	0.64	0.83	0.70	0.64	0.60	0.52	0.37
31	Ratio in real context	1.94	5	39	1.94	4.39	3.32	1.69	0.50	0.15	0.04
32	Primes, factors, multiples	1.38	3	46	1.38	2.48	1.95	1.45	0.89	0.48	0.31
		55.16	**80**		**55.16**	**73.83**	**66.98**	**57.76**	**45.73**	**33.63**	**24.32**

Suggested grade boundaries

Grade	5	4	3	2	1
Mark	**70**	**62**	**52**	**40**	**30**