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

Summer 2022 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).
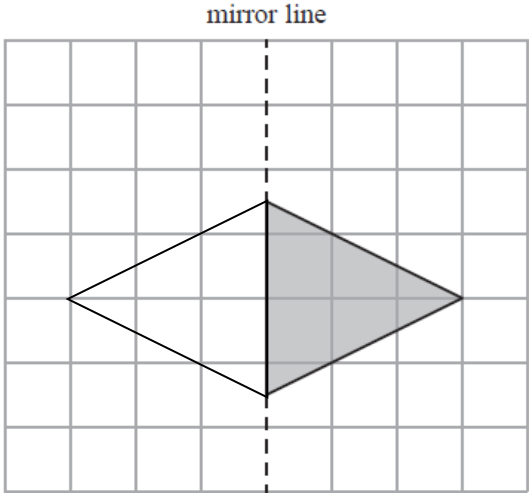
Question 1 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$40 \times 10 = 400$	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
	$4e$	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
		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
	6000	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
	$45\% = 0.45$ and $\frac{1}{2} = 0.50$ 45%, $\frac{1}{2}$, 0.55	B1	This mark is given for the correct answer only
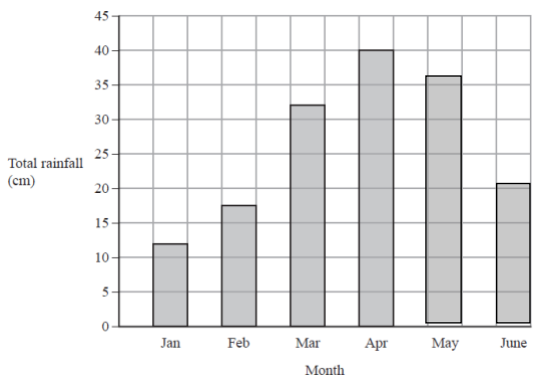
Question 6 (Total 1 mark)

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
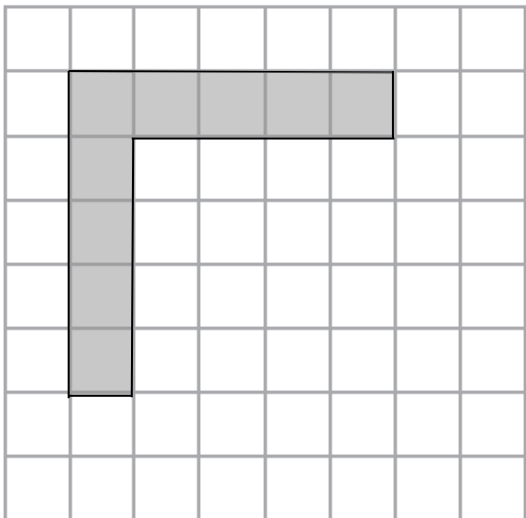
Question 7 (Total 3 marks)

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 8 (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 9 (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 10 (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 11(Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$89\,198 - 88\,738 = 460$	M1	This mark is given for the number of kwH Fiona used in November
	460×16	M1	This mark is given for a method to show the cost of the electricity used in November
	$\begin{array}{r} 460 \\ \underline{16 \times} \\ 2760 \\ 4600 \end{array}$	M1	This mark is given for a method to calculate the cost of the electricity used in November
	£73.60	A1	This mark is given for a correct answer only (accept £73.6 or 7360p)

Question 12 (Total 4 marks)

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

Question 13 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	$\dfrac{4}{15}$	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 14 (Total 2 marks)

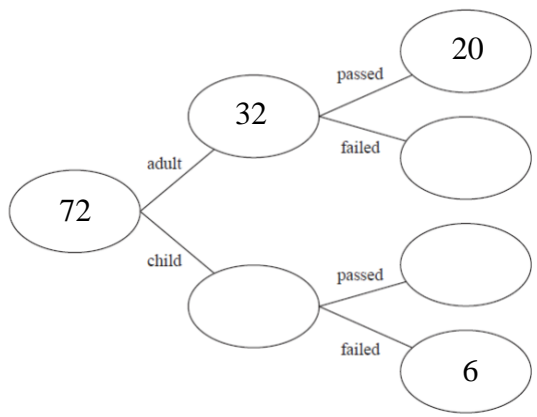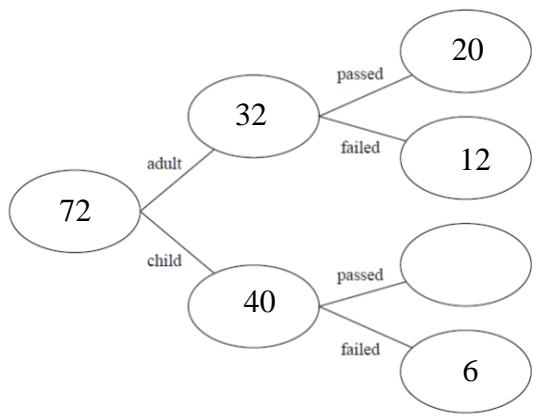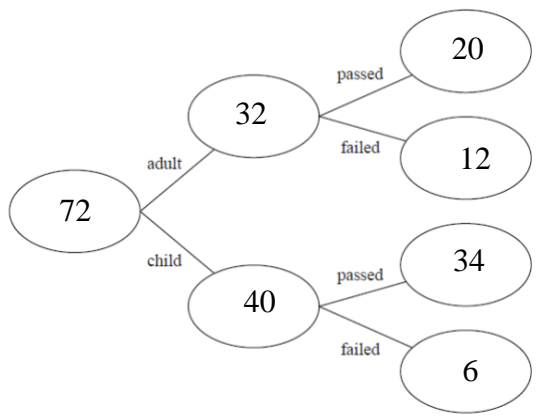| Part	Working or answer an examiner might expect to see	Mark	Notes
	$6 \times 4 = 24$	M1	This mark is given for a method to work out the value of y using a correct substitution
	$24 - 5 = 19$	A1	This mark is given for the correct answer only

Question 15 (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 16 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$50 \div 40 = 1.25$ hrs $= 1$ hr 15 mins	P1	This mark is given for a process to find the amount of time Savio spends driving
	$07\ 30 + 1\ 15$	P1	This mark is given for a process to add the start time to the driving time
	$08\ 45$	A1	This mark is given for a correct answer only (accept 8:45 or 8.45 a.m.)
(b)	For example: It will be earlier	C1	This mark is given for a correct explanation

Question 17 (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)	$\dfrac{12}{72} = \dfrac{1}{6}$	M1	This mark is given for a method to find the probability (for example, $\dfrac{a}{72}$ where $0 < a < 72$ or $\dfrac{12}{b}$ where $b > 12$ and b is an integer)
		A1	This mark is given for a correct answer only (or an equivalent fraction)

Question 18 (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 19 (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 20 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$1 - \dfrac{5}{8} = \dfrac{3}{8}$ $1 - \dfrac{9}{11} = \dfrac{2}{11}$	M1	This mark is given for a method to find the unshaded parts of rectangle **B**
	$1 - \dfrac{3}{8} - \dfrac{2}{11} = 1 - \dfrac{33}{88} - \dfrac{16}{88} = 1 - \dfrac{49}{88}$	M1	This mark is given for a method to find the fraction of the rectangle **B** that is shaded
	$\dfrac{39}{88}$	A1	This mark is given for the correct answer only

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 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\pi \times 3^2 \times 5$	M1	This mark is given for a process to use the height 5 or the diameter 6 or the radius 3 in a formula
		M1	This mark is given for a full process to find the volume of the cylinder
	45π	A1	This mark is given for a correct answer only

Question 23 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$7x < 35$	M1	This mark is given for a method to solve the inequality
	$x < 5$	A1	This mark is given for a correct answer only

Question 24 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	2, 2, 31	M1	This mark is given for a complete method to find the prime factors (for example, using a factor tree with no more than one error)
	$2 \times 2 \times 31$	A1	This mark is given for a correct answer (or equivalent)

Question 25 (Total 5 marks)

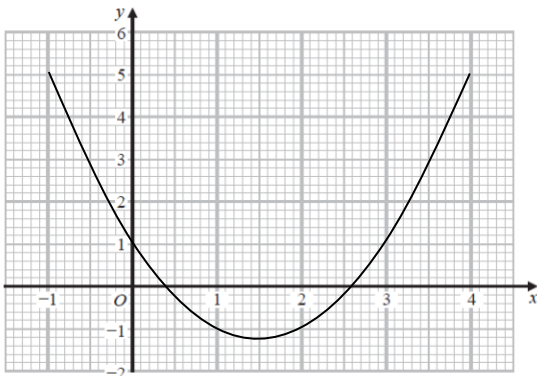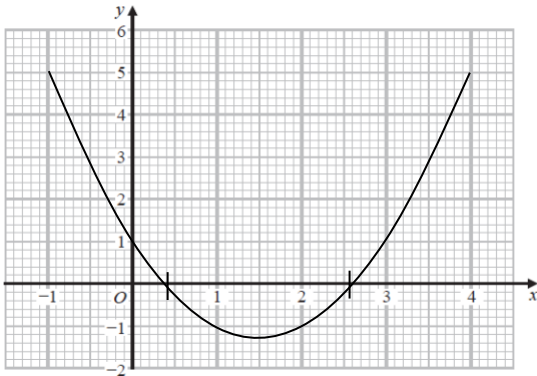| Part	Working or answer an examiner might expect to see	Mark	Notes
	$160 \div (3 + 7) = 16$	P1	This mark is given for the first step in a process to find the number of cars
	$16 \times 3 = 48$	P1	This mark is given for a full process to find the number of cars
	$48 \times \dfrac{1}{8} = 6$	P1	This mark 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 26 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	0.00163	B1	This mark is given for the correct answer only
(b)	4.38×10^5	B1	This mark is given for the correct answer only
(c)	$4 \times 6 \times 10^3 \times 10^{-5}$	M1	This mark is given for a method to find the answer
	2.4×10^{-1}	A1	This mark is given for the correct answer only

Question 27 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Hexagon: $360 \div 6 = 60$ or $180 \times 4 \div 6 = 120$ Pentagon: $360 \div 5 = 72$ or $180 \times 3 \div 5 = 108$	M1	This mark is given a method to find an exterior angle or an interior angle of one of the shapes
	$60 + 72$ or $360 - 120 - 108$	M1	This mark is given for a complete method to find the size of the angle x
	132	A1	This mark is given for the correct answer only

Question 28 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	<table><tr><td>x</td><td>–1</td><td>0</td><td>1</td><td>2</td><td>3</td><td>4</td></tr><tr><td>y</td><td>**5**</td><td>1</td><td>**–1**</td><td>**–1**</td><td>**1**</td><td>**5**</td></tr></table>	B2	This mark is given for a fully correct table (B1 is given for two or three correct values)
(b)		M1	This mark is given for at least four of the points (–1, 5), (0, 1), (1, –1), (2, –1), (3, 1) and (4, 5) plotted correctly
		A1	This mark is given for a fully correct curve drawn
(c)		M1	This mark is given for showing marks indicating the interception of the curve with the x-axis
	$x = 0.4$ and $x = 2.6$	A1	Accept answers in the range 0.2 to 0.6 and 2.4 to 2.8

Question 29 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Volume of cube **A** = 3^3 = 27 Volume of cube **B** = 4^3 = 64	P1	This mark is given a process to find the volume of at least one cube
	Density of cube **A** = 81 ÷ 27 = 3 Density of cube **B** = 128 ÷ 64 = 2	P1	This mark is given a process to find the density of at least one cube
	3 : 2	A1	This mark is given for the correct answer only (or equivalent)

Question 30 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.5 or $\frac{1}{2}$	B1	This mark is given for a correct answer only