

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

### November 2017 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
(a)	3.65	1	This mark is given for the correct answer only
(b)	2700	1	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
	$2 + (7 \times 10) = 72$	1	This mark is given for the correct answer only

**Question 3 (Total 2 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$y = 4 \times 10.5 = 42$	1	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
	-9, 2	1	This mark is given for the correct answers only (regardless of order)

**Question 5 (Total 1 mark)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(23 \times 2) + 1 = 47$	1	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
	$a - 1 + a + a + a + a + 4$	1	This mark is given for writing out the terms
	$5a + 3$	1	This mark is given for collecting the terms
	$L = 5a + 3$	1	This mark is given for the correct answer as a formula

**Question 7 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$(6, -2)$	1	This mark is given for the correct answer only
(b)(i)	Point marked at $(2, 9)$	1	This mark is given for the correct answer only
(b)(ii)	$(4 \times 2) + 1 = 9$ Yes, since when $x = 2, y = 9$	1	This mark is given for a correct answer with a reason
(c)	Line drawn at $x = -2$	1	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
		1	This mark is given for any rectangle drawn where the length is twice the width
	$4 \times 8$ rectangle correctly drawn	1	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
	The result should be twice the original, not half	1	This mark is given for a correct explanation

**Question 10 (Total 2 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Jake; range of marks is smaller than Sarah's	1	This mark is given for a correct explanation referring to spread, range or highest and lowest values
(b)	No, since stem not used – it should be 26	1	This mark is given for a correct explanation

**Question 11 (Total 2 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$30 \div 8 = 3.75$	1	This mark is given for dividing 30 by 8
	3.75 to the next whole number (of adults) is 4	1	This mark is given for the correct answer only
(b)	No, since $32 \div 8 = 4$	1	This mark is given for a correct explanation

**Question 12 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	<b>12</b> 7    19 18 <b>8</b> 26 <b>30</b> 15 <b>45</b>	1	This mark is given for values (in bold) entered on the table
		1	This mark is given for a complete row of column
		1	This mark is given for a fully correct table
(b)	$\frac{8}{45}$	1	This mark is given for the answer shown (or an alternative value, e.g. 1.77777...)

**Question 13 (Total 4 marks)**

Part	Working an or answer examiner might expect to see	Mark	Notes
	$249 \div 6 = 49$	1	This mark is given for finding the area of one face
	$\sqrt{49} = 7$	1	This mark is given for finding the length of the side of the cube
	$7 \times 7 \times 7$	1	This mark is given for an attempt to find the volume of the cube
	343	1	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
	$1 - \frac{5}{7}$	1	This mark is given for comparing $\frac{5}{7}$ to 1
	$\frac{7}{5} = 1\frac{2}{5}$	1	This mark is given for comparing $\frac{7}{5}$ to 1
	$\frac{5}{7}$	1	This mark is given for the correct answer only, with supporting evidence

**Question 15 (Total 2 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{9}{7+4+9} \times 100$	1	This mark is given representing the fraction or orange buttons in the jar
	45	1	This mark is given for the correct answer only

**Question 16 (Total 5 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	Both values given are overestimates, so the actual cost will be less than £240	1	This mark is given for a correct explanation
(b)	$35 \times 5.80 = 203$	1	This mark is given for a process to find the cost of 35 shirts before the discount is applied
	$203 \times 10\% = 20.30$	1	This mark is given for a process to find 10% of the cost
	$203 - 20.30$	1	This mark is given for a complete process to find actual cost of 35 T-shirts
	182.70	1	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
	$3 + 9 = 12, 3 + 2 = 5, 3 + 3 = 6$ $4 + 9 = 13, 4 + 2 = 6, 4 + 3 = 7$ $5 + 9 = 14, 5 + 2 = 7, 5 + 3 = 8$	1	This mark is given for a sample space or listed outcomes
	$\frac{4}{9}$	1	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
	$450 \div (2 + 5 + 3) = 45$	1	This mark is given for a process to find how many parts the amount should be divided into
	$3 \times 45 = 135$	1	This mark is given for the correct answer only

**Question 19 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\frac{24}{16} = 1.5$	1	This mark is given for a process to find how much to multiply by
	$120 \times 1.5, 140 \times 1.5, 250 \times 1.5, 2 \times 1.5$	1	This mark is given for a method to scale up at least one ingredient
	180, 210, 375, 3	1	This mark is given for the four correct answers only

**Question 20 (Total 3 marks)**

Part	Working an or answer examiner might expect to see	Mark	Notes
	$\frac{600}{4^2 + 5}$	1	This mark is given for using 600, 5 or 4 in an approximation
	$\frac{600}{4^2 + 5} \approx \frac{600}{20} = 30$	1	This mark is given for finding an appropriate approximation for the calculation shown
	Ami's answer is closest	1	This mark is given for a correct explanation with supporting working

**Question 21 (Total 3 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$6 \times 0.0003$ or $0.06 \times 0.03$	1	This mark is given for a process to start the calculation or sight of $1.8 \times 10^n$ where $n \neq -3$
	0.0018 or $\frac{6 \times 10^{-2} \times 3 \times 10^{-4}}{1 \times 10^{-2}}$ or $18 \times 10^{-4}$	1	This mark is given for a complete process to find a value for the calculation
	$1.8 \times 10^{-3}$	1	This mark is given for the correct answer only

**Question 22 (Total 3 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\frac{8}{20} + \frac{5}{20}$  or 0.4 + 0.25	1	This mark is given for a suitable common denominator with one fraction out of two correct  or decimal equivalents
	$\frac{13}{20}$ or 0.65	1	This mark is given for the correct answer only
(b)	$\frac{1}{8}$ or 0.125	1	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
	36 2, 18 2, 2, 9 2, 2, 3, 3	1	This mark is given for a complete method to find prime factors, which could be shown on a complete factor tree with no more than one arithmetic error
	$2 \times 2 \times 3 \times 3$	1	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
	$x, x + 7, 2x + 14$	1	This mark is given for representing the ages algebraically
	$x + x + 7 + 2x + 14 = 77$ $4x + 21 = 77$	1	This mark is given for a sum of the three expressions
	$x = 14$	1	This mark is given for finding a value of $x$ as the age of Jay
	14 : 21 : 42	1	This mark is given for the answer shown or an equivalent ratio (e.g. 2 : 3 : 6)



**Question 25 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$EBC = 35^\circ$ $FDE = 75^\circ$ corresponding angles are equal	1	This mark is given for finding one or two angles using parallel lines
	$FED = 70^\circ$ angles in a triangle sum to 180	1	This mark is given showing method to complete calculation to reach $70^\circ$
	$ABF = 70^\circ$ opposite angles in a parallelogram are equal	1	This mark is given for $ABF$ identified as $70^\circ$
		1	This mark is given for full appropriate reasons given

**Question 26 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\pi \times 4^2 = 50.265\dots$ $\pi \times 7^2 = 153.938\dots$ $\pi \times 10^2 = 314.159\dots$	1	This mark is given for process to find the area of any relevant circle
	$\pi \times 7^2 - \pi \times 4^2$	1	This mark is given for complete method to find the shaded area
	$= 103.673\dots$	1	This mark is given for the correct answer only
	Daisy is wrong since $\frac{103.313\dots}{314.159\dots} = 0.329\dots$ and $0.329 \neq \frac{1}{3}$	1	This mark is given for a correct comment supported by working

**Question 27 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$200 + 3300 + 2000 + 0 + 1800 = 7300$	1	This mark is given for $fx$ with $x$ consistent within intervals
	$7300 \div 20$	1	This mark is given $\Sigma fx \div \Sigma f$
	365	1	This mark is given for the correct answer only
(b)	Yes, since outliers can affect the mean	1	This mark is given for a correct comment

**Question 28 (Total 4 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$2x + 6 = 5x - 9$	1	This mark is given for forming an equation
	$3x = 15$ $x = 5$	1	This mark is given for rearranging and solving for $x$
	$(2 \times 5) + 6 = 16$ or $(5 \times 5) - 9 = 16$	1	This mark is given for substituting 5 into the side length
	$48 \div 16 = 3$ so $y = 3$	1	This mark is given for the correct answer only

**Question 29 (Total 1 mark)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	The graph is drawn with line segments, rather than a curve	1	This mark is given for a correct statement

**Question 30 (Total 2 marks)**

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(2.80 \times 100) \div (100 - 30)$ or $2.80 \div 0.7$	1	This mark is given for a process to find the normal price of the book
	4	1	This mark is given for the correct answer only