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

October 2016 mock paper mark scheme

NOTES ON MARKING PRINCIPLES

Note that in some cases a correct answer alone will not score marks unless supported by working; these situations are made clear in the mark scheme. Examiners are prepared to award zero marks if the student's response is not worthy of credit according to the mark scheme.

Question 1 (Total 1 mark)

Part	Working or answer an examiner might expect to see	Mark	Notes
	42 000	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
	3.05, 3.2, 3.205, 3.25	B1	This mark is given for the correct answer only
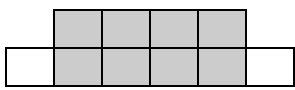
Question 3 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	4	B1	This mark is given for the correct answer only
(b)	$(5 + 6 + 7 + 5 + 3 + 6 + 7) -$ $(7 + 6 + 6 + 3 + 2 + 4 + 4)$ or $(5 - 7) + (6 - 6) + (7 - 6) + (5 - 3) +$ $(3 - 2) + (6 - 4) + (7 - 4)$	M1	This mark is given for a method to for ti find the difference in hours of sunshine
	7	A1	This mark is given for the correct answer only

Question 4 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$45 \div 2.85 \ (= 15.789\ldots)$	P1	This mark is given for a start to a process to find the solution
	$15 \times 2.85 = 42.75$ $45 - 42.75 =$	P1	This mark is given for a complete process to find the amount of change Ben should get
	2.25	A1	This mark is given for the correct answer only

Question 5 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)		C1	This mark is given for a correct pattern drawn
(b)	4, 6, 8, 10, 12, 14, …	M1	This mark is given for a evidence of interpretation: a number sequence or further patterns drawn
	16	A1	This mark is given for the correct answer only
(c)	e.g. pattern 10 has 22 squares	C1	This mark is given for a start to an explanation or counterexample
	No; pattern number 10 has 22 squares and pattern number 20 has 42 squares, not 44 squares	C1	This mark is given for a complete explanation

Question 6 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	2, 3, 5, 7, 11, 13, ….	M1	This mark is given for a method to identify two different prime numbers
	2 + 7 = 9 or 3 + 13 = 16 or 2 + 23 = 25, etc	C1	This mark is given for a counterexample shown

Question 7 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	8 – 1 = 7	B1	This mark is given for the correct answer only
(b)	1, 2, 2, 3, 3, 6, 7, 8	M1	This mark is given for a method of listing the numbers in order and identifying the middle two numbers as 3
	3	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
	$\dfrac{3}{5} \times 195 \ (= 117)$ or $\dfrac{2}{3} \times (375 - 195) \ (= 120)$	P1	This mark is given for a process to start finding a solution
	$\dfrac{3}{5} \times 195 + \dfrac{2}{3} \times (180)$	P1	This mark is given for a complete process to find a solution
	237	A1	This mark is given for the correct answer only

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.21 or 19500	P1	This mark is given for a process for converting between m*l* and *l*
	$19500 \div 210$ or $19.5 \div 0.21$	P1	This mark is given for a process to find out how many cups can be completely filled
	92	A1	This mark is given for the correct answer only

Question 10 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	4.5 cm, 6 cm or 7.5 cm 9 km, 12 km or 15 km	M1	This mark is given for a method of measuring of one of the lines, $\pm$ 2mm, and scaling ($\times 2$)
	$AB + BC - AC = 4.5 + 6 - 7.5$ or $AB + BC - AC = 9 + 12 - 15$	M1	This mark is given for a complete method to find $AB + BC - AC$ (scaled or unscaled)
	6	A1	This mark is given for an answer in range $4.8 - 7.2$, supported by correct working

Question 11 (Total 2 marks)

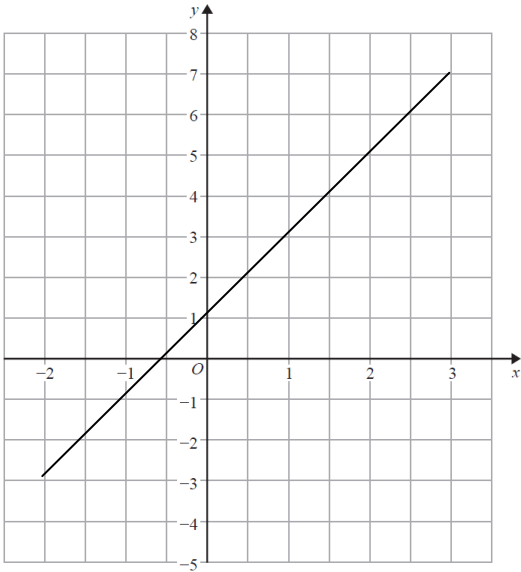| Part	Working or answer an examiner might expect to see	Mark	Notes
	78 : 52	M1	This mark is given for a method to for representing as a ratio
	3 : 2	A1	This mark is given for the correct answer only

Question 12 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$ABC = 46°$ vertically opposite angles are equal or $BAC = 180° - 113° (= 67°)$ angles on a straight line add to 180°	M1	This mark is given for a method leading to the evaluation of another angle in triangle *ABC*
	$ACB = 67°$ angles in a triangle add up to 180°	A1	This mark is given for the correct answer only
		C1	This mark is given for all appropriate reasons related to method shown
	$ACB = BAC = 67°$ an isosceles triangle has two equal angles	C1	This mark is given for a concluding statement

Question 13 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	$\frac{8}{10}$ and $\frac{43}{56}$	P1	This mark is given for a process to start making a comparison
	80% and 76.7…% or $56 \times 0.8 = 44.8$	P1	This mark is given for a complete process to give values that can be used for comparison
	No, the advert is not supported	A1	This mark is given for the correct statement with supporting working

Question 14 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$x = -2, y = -3$ $x = -1, y = -1$ $x = 0, y = 1$ $x = 1, y = 3$ $x = 2, y = 5$ $x = 3, y = 7$	M1	This mark is given for at least 2 correct attempts to find points by substituting or line drawn with gradient of 2 or line drawn with y intercept at 1
		M1	This mark is given for a at least 2 correct points plotted or line segment of $y = 2x + 1$ drawn
		A1	This mark is given for the correct line between $x = -2$ and $x = 3$

Question 15 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	8, 11, or 16 seen	M1	This mark is given for a method to substitute 1, 2 or 3 into $n^2 + 7$
	8, 11, 16	A1	This mark is given for the correct answer only
(b)	$\sqrt{(128 - 7)} = 11$; 11th term	B1	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
	$\div 20 \times 50$ or $50 \div 20 \ (= 2.5)$	M1	This mark is given for a method to find the right amounts for 50 walnut biscuits
		A1	This mark is given for 2 or 3 amounts correct
	125, 250, 100, 125, 5	A1	This mark is given for all amounts correct

Question 17 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$2y^3$	B1	This mark is given for the correct answer only
(b)	$m(m + 1)$	B1	This mark is given for the correct answer only
(c)	$c - 5 = 3h$ or $\dfrac{c}{3} = \dfrac{3h+5}{3}$	M1	This mark is given for subtracting 5 from both sides or dividing each term by 3 as a first step
	$h = \dfrac{c-5}{3}$	A1	This mark is given for the correct answer only

Question 18 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	24, 48, 72, 96, 120, … 20, 40, 60, 80, 100, 120, …	P1	This mark is given for a process to list multiples of 24 and 20 with at least 3 numbers in each list, or an expansion of 24 and 20 into factors
	120 minutes (or 2 hours)	A1	This mark is given for a correct answer identifying the lowest common multiple (LCM)
	9.30 a.m.	A1	This mark is given for a correct answer only

Question 19 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$(x + 5)^2(x + 5)^2 =$	C1	This mark is given for a correct for expansion of $(x + 5)^2$ with at least 3 terms correct or for a substitution of the same number into both expressions (counterexample)
	$(x + 5)^2 = x^2 + 10x + 25$ Azmol is wrong; $x^2 + 10x + 25 \neq x^2 + 25$ for all values of x	C1	This mark is given for a correct evaluation of both expressions

Question 20 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$105 \div (5 - 2) \ (= 35)$ Kim gets £70, Molly gets £175	P1	This mark is given for a strategy to start to solve the problem
	$385 - (2 \times 35) - (5 \times 35) \ (= 140)$ or $(385 \div 35) - 2 - 5 \ (= 4)$	P1	This mark is given for a process to find Laura's share
	$\dfrac{140}{385} \times 100$ or $\dfrac{4}{11} \times 100$	P1	This mark is given for a process to find the percentage Laura gets
	36.4%	A1	This mark is given for an answer in range 36.3 to 36.4

Question 21 (Total 2 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	Points are joined with a curve, not with line segments	C1	This mark is given for a correct statement
	Points should be plotted at mid-points of the intervals, not end points	C1	This mark is given for a correct statement

Question 22 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	5% = 2.30; 100% = 20 × 2.30	M1	This mark is given for a method to link 5% with 2.30 or 100 ÷ 5 (= 20)
	46	A1	This mark is given for a correct answer only

Question 23 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	(180 × 3) ÷ 5 (= 108) or 360 ÷ 5 (= 72)	P1	This mark is given for a process to find either an interior or an exterior angle of the pentagon *ABCDE*
	FCD = CDF = 72 *CFD* = 180 − 72 − 72	P1	This mark is given for a complete process to find angle *CFD*
	36	A1	This mark is given for a correct answer only

Question 24 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$\pi \times 4.2^2$ (÷ 2)	P1	This mark is given for a process to find the area of circle or semicircle
	$(8.4 \times 5.6) + \dfrac{\pi \times 4.2^2}{2}$	P1	This mark is given for a process to find the area of the garden (= 74.7...)
	74.7 ÷ 12 (= 6.22, so 7 boxes required)	P1	This mark is given for a process to find number of boxes required
	7 × 4.99	P1	This mark is given for a process to find the cost of 7 boxes
	34.93	A1	This mark is given for a correct answer only
(b)	Carol might need to buy fewer boxes	C1	This mark is given for a correct statement

Question 25 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\dfrac{4}{7}$, $\dfrac{3}{7}$	B1	This mark is given for two correct answers only
	$\dfrac{3}{8}$, $\dfrac{5}{8}$, $\dfrac{3}{8}$, $\dfrac{5}{8}$	B1	This mark is given for four correct answers only
	$\dfrac{3}{7} \times \dfrac{5}{8}$	M1	This mark is given for a method to find the probability of two red pens
	$\dfrac{15}{56}$	A1	This mark is given for a correct answer only

Question 26 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	3.4×10^8	B1	This mark is given for the correct answer only
(b)	$\dfrac{0.000000167}{0.00911}$	M1	This mark is given for converting at least one number or for digits 183 seen
	0.0000183	A1	This mark is given for an answer in the range 0.0000183 to 0.000018332

Question 27 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\tan x = \dfrac{1.9}{3.2}$	M1	This mark is given for a method to recall the appropriate formula
	30.7	A1	This mark is given for an answer in range 30.6 to 30.7