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

October 2016 mock paper 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.

In some cases full marks can be given for a question or part of questions where no working is seen. However, it is wise to show working for one small slip could lead to all marks being lost if no working is shown.

Some questions (such as QWC) 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). |

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 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$-4, -2, 0, 1, 4$	B1	This mark is given for the correct list in the correct order

Question 2 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	9874	B1	This mark is given for the correct answer only
(b)	4798	B1	This mark is given for the correct answer only

Question 3 (Total 4 marks)

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

Question 4 (Total 6 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	0.2×54 or $\dfrac{20}{100} \times 54$	M1	This mark is given for a complete correct method to find 20%
	10.80	A1	This mark is given for the correct answer only

Question 5 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	× at $(-2, -3)$	B1	This mark is given for the cross correctly plotted
(b)	$(-1, 2)$	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
	32p + 8p, 64p + 16p, 96p + 24p, etc	P1	This mark is given for a process to start to find the combined cost of pens and pencils
	£15 ÷ 40p = 15 ÷ 0.4	P1	This mark is given for a complete process to find how many pens and pencils can be bought
	37	A1	This mark is given for the correct answer only, rounding 37.5 down to 37

Question 7 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)		M1	This mark is given for a method to for at least 3 correct frequencies (or all tallies correct) if frequencies missing
	5, 2, 5, 1, 3	A1	This mark is given for the correct answer only (all frequencies correct)
(b)		C1	This mark is given for 5 correct age labels or a linear scale.
		C1	This mark is given for a diagram or chart, correctly showing data for at least 4 age groups
		C1	This mark is given for a fully correct diagram or chart, with axis correctly scaled and labelled
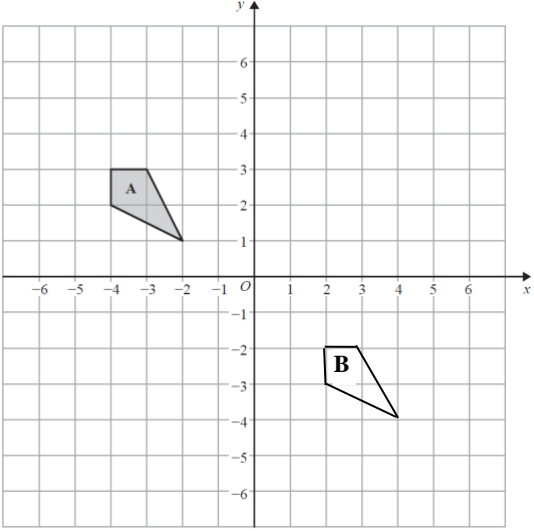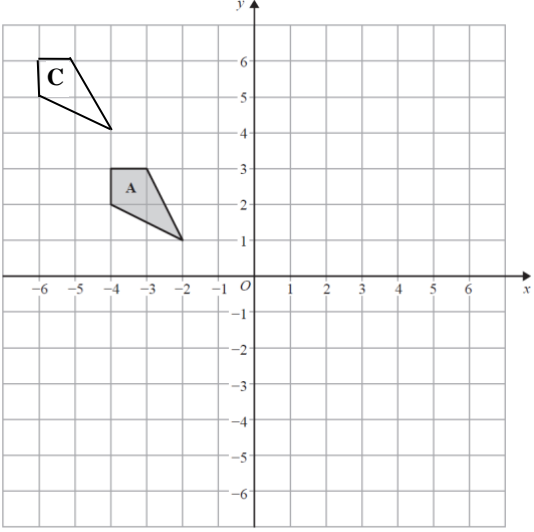
Question 8 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	11th in a list of 21 heights is 165	B1	This mark is given for the correct answer only
(b)	The median height of the boys (165 cm) is greater than the median height of the girls (162 cm)	C1	This mark is given for a correct statement about the medians
	The range of the boys' heights (41 cm) is smaller than the range of the girls' heights (45 cm)	C1	This mark is given for a correct statement about the ranges (NB: to get both marks at least one must be interpreted in the context of the question)

Question 9 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	Reliable Taxis: 1.5 × 30 = 45	P1	This mark is given for a process to calculate the cost with one taxi firm
	Speedy Taxis: 33 + 11.50 = 44.50 City Taxis: 37.50 + 8 = 45.50	P1	This mark is given for a process to calculate the cost with all three taxi firms
	Speedy Taxis is the cheapest company to use	C1	This mark is given for a correct answer supported by working
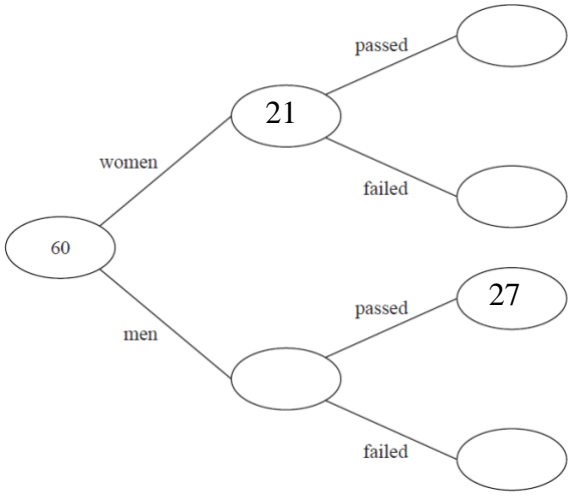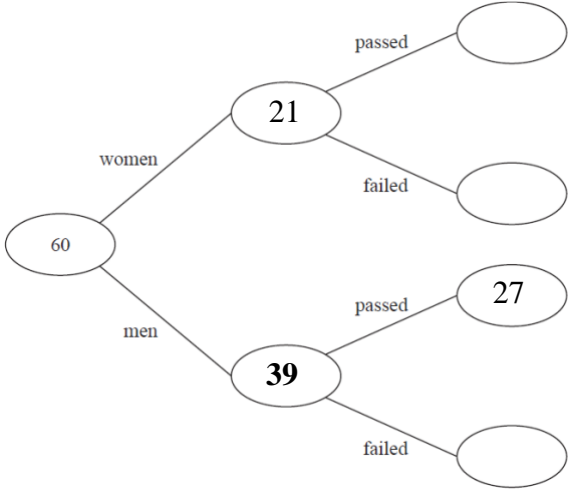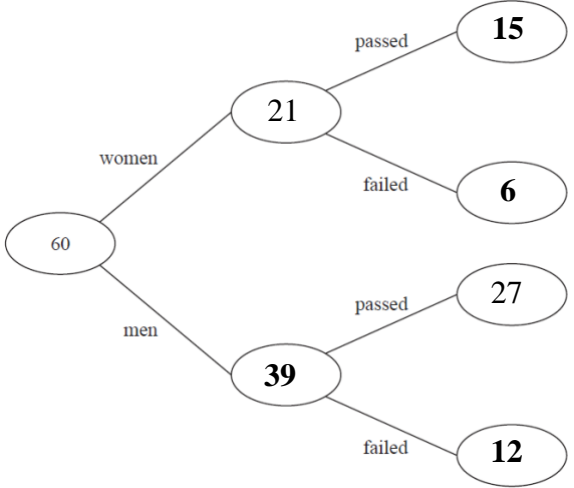
Question 10 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)		B1	This mark is given for the correct shape in the correct position
(b)		B1	This mark is given for the correct shape in the correct position
(c)	$\begin{pmatrix} -2 \\ 3 \end{pmatrix}$	C1	This mark is given for the correct vector

Question 11 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$3x + 2y$	B1	This mark is given for the correct answer only
(b)	$2p$, $3q$	B1	This mark is given for $2p$ or $3q$
	$2p + 3q$	B1	This mark is given for the correct answer only
(c)	$12m - 18$	B1	This mark is given for the correct answer only
(d)	$7f + 6 - 6 = 27 - 6$; $7f = 21$	M1	This mark is given for an intention to subtract 6 from both sides of the equation
	$f = 3$	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
(a)		C1	This mark is given for starting to interpret information, using one correct frequency from 21 or 27
		C1	This mark is given for at least one correct additional value $60 - 21 = 39$
		C1	This mark is given for communicating all information correctly $39 - 27 = 12$ $18 - 12 = 6$ $21 - 6 = 15$
(b)	12 or 39	M1	$\dfrac{a}{39}$ with $a < 39$ **or** $\dfrac{12}{b}$ with $b > 12$
	$\dfrac{12}{39}$	A1	This mark is given for the correct answer only

Question 13 (Total 3 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
(a)	2, 2, 7, 5	P1	This mark is given for rounding one dimension correctly
	$(2 \times 2) + (7 \times 5)$	P1	This mark is given for a process to add estimates of the areas of the two rectangles
	39	A1	This mark is given for the correct answer only
(b)	An underestimate, since all numbers have been rounded down	C1	This mark is given for a correct statement

Question 14 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$80 \div 2 = 40$ so 40×5 or scale factor of 2.5, so 2.5×80	M1	This mark is given for a method to find how many cakes were sold
	200	A1	This mark is given for the correct answer only

Question 15 (Total 5 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$5x - 147 = 2x$ or $360 - (116 + 5x - 147 + 2x)$	P1	This mark is given for a process to start solving the problem
	$3x = 147$, so $x = 49$	P1	This mark is given for a complete process to solve the equation
	Angles are 116°, 98°, 98° and 48°	P1	This mark is given for a complete process to find the size of the smallest angle
	48°	A1	This mark is given for the correct answer only

Question 16 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$10 \times 10 \times 10 = 1000$ $4500 \div 1000$	M1	This mark is given for a method to convert mm$_3$ to cm$_3$
	4.5	A1	This mark is given for the correct answer only

Question 17 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	$\dfrac{13}{5} - \dfrac{11}{6}$	M1	This method mark is given for converting both expressions to improper fractions
	$\dfrac{78}{30} - \dfrac{55}{30}$	M1	This method mark is given for a correct method to find a common denominator
	$\dfrac{23}{30}$	A1	This accuracy mark is given for the correct answer (or an equivalent fraction)

Question 18 (Total 4 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)(i)	The starting price **or** a fixed charge	C1	This communication mark is given for correct interpretation
(a)(ii)	The cost per minute **or** how much the price increases every minute	C1	This communication mark is given for correct interpretation
(b)	$7.5 \div 5$ **or** the y-intercept = 0.5	M1	This method mark is given for an attempt to calculate the gradient, with 2 correct values used or for finding the y-intercept
	$1.5x + 0.5$	M1	This method mark is given for a gradient given as a coefficient of x in an equation
	$y = 1.5x + 0.5$	A1	This accuracy mark is given for the fully correct equation for the gradient

Question 19 (Total 4 marks)

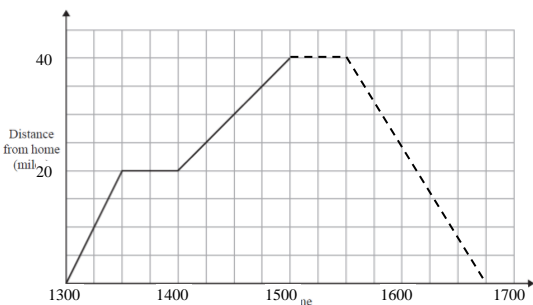| Part	Working or answer an examiner might expect to see	Mark	Notes
	$\sqrt{5^2 - 4^2} = 3$	P2	Two process marks are given for dividing the shape into a rectangle and a triangle and finding the perpendicular height of the triangle (One process mark is given for the expression $5_2 - 4_2$ being used)
	$4 \times 8 = 32$ **or** $\quad \frac{1}{2}(3 \times 8) = 12 \quad$ or $\quad 2 \times \frac{1}{2}(3 \times 4) = 12$	P1	This process mark is given for process to find the area of one of the two shapes formed
	$32 + 12$	P1	This process mark is given for a complete process to find the total area of the shape *ABCDE*
	44 (cm2)	A1	This accuracy mark is given for the correct answer only

Question 20 (Total 6 marks)

Part	Working an or answer examiner might expect to see	Mark	Notes
	0835 to 1105 = 2.5 hours $2.5 \times 110 = 275$ miles	P1	This process mark is given for a process to find distance from Manchester to London
	0835 to 1135 = 3 hours $275 + 37 = 312$ miles $312 \div 3 = 104$ mph	P1	This process mark is given for a process to find speed for Gill's journey from Manchester to London
	110 mph – 104 mph	P1	This process mark is given for a complete process to find difference in speeds
	6 (mph)	A1	This accuracy mark is given for the correct answer only

Question 21 (Total 2 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
(a)	$600 \div 60 = 10$, $180 \div 30 = 6$ or $6 \times 1.8 = 10.8$, $0.6 \times 0.3 = 0.18$	P1	This process mark is given for a process to start to solve the problem
	$10 \times 6 = 60$ or $10.8 \div 0.18 = 60$	P1	This process mark is given for a complete process to find the total number of tiles
	$\frac{3}{5} \times 60 \ (= 36)$	P1	This process mark is given for a process to find out how many white tiles are needed
	$(60 - 36) = 24$ tiles 24 tiles in ratio 1:3 is 6:18	P1	This process mark is given for a process to find out how many green and blue tiles are needed
	White = 36, Green = 6, Blue = 18	A1	This accuracy mark is given for the correct answer only
(b)	Fewer tiles will be needed	C1	This communication mark is given for a correct conclusion.

Question 22 (Total 3 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	40 mph × 0.5 hour (= 20 miles) **or** x-axis scaled correctly	M1	This method mark is given for a method to find the distance to the hospital
	40 miles **or** y-axis scaled correctly	M1	This method mark is given for finding a total distance from home to the hospital
	40 miles at 32 mph takes 1.25 hours or a completed travel graph 	A1	This accuracy mark is given for finding the time of the journey home from the hospital or for a fully a complete travel graph
	Ria arrives home at 16 45	C1	This communication mark is given for a correct conclusion

Question 23 (Total 6 marks)

Part	Working or answer an examiner might expect to see	Mark	Notes
	0.455, 0.465	B1	This mark is given for 0.455 or 0.465
	$0.455 \leq y < 0.465$	B1	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
	2, 3, 5	M1	This mark is given for a method to for a correct start to a factor tree (2 correct branches)
	$2 \times 2 \times 2 \times 3 \times 3 \times 5$	M1	This mark is given for a fully correct tree or correct factors as a list
	$2_3 \times 3_2 \times 5$	A1	This mark is given for the correct answer only