

# Mark Scheme (Results)

## Summer 2010

Functional Mathematics

Functional Skills Mathematics - FM201  
Paper: FM201/01

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Que.	Process	Evidence	Mark	Notes
Q1	Representing Information	A <b>list or table or chart</b> . A bar chart will be credited	1 or	A List has no headings A Table has at least one heading.
		An appropriate two way table or travel chart. A bar chart is <b>not</b> an appropriate way to record this information.	2	An efficient way to record information.
	Input Information	Numbers input. Ignore units.	1 or	At least two non zero numbers correctly input. Allow at least three bars drawn on a bar chart
		Complete and correct entries. Ignore units.	2	Ignore L→L, J→J, A→A, F→F These entries may be blank.
M1				
M2				

Que.	Process	Evidence	Mark	Notes
Q2	Interpret information	Co-ordinate passengers and planes.	1 or	Numbers can indicate plane types. Eg: $1225 \div '380'$ $1225 - 380$
		Link the plane types to the airport.	2	Evidence that <b>all</b> passengers from <b>any single</b> airport have been accommodated. Eg: Use 3 B planes for London. <b>Or</b> Their total passengers '2400' any use of any type of plane/s to accommodate.
	M1			
	Handles empty seats	Empty seats are seen.	1 or	Evidence that 'empty seats' have been calculated for at least one airport.
	Communicate a solution to the problem	A solution will show all passengers from all airports being accommodated on planes. Which plane types accommodate the passengers must be explicit.	2	The total number of 'empty seats' must be found. Allow one arithmetical error in calculations. The total number of 'empty seats' must be less than 280.
	M2			

Que.	Process	Evidence	Mark	Notes
Q3	Interprets problem	Number of passengers	1 or	380 + 228 or 608 seen or implied, or equivalent
		Shows a method to find the numbers of passengers who need to delay their journey.	2 or	'608' - 450 or equivalent eg: 158 seen
	Calculates	<b>Either:</b> finds the % of passengers who need to delay their journey.  <b>Or:</b> Finds the number of passengers for incentives	3 or	<b>either</b> '158' ÷ '608' seen or implied.  <b>or</b> 20% or 40% or 50% of '608' seen or implied. Methods do not need to be processed at this stage.
	Communicates Decision	Communicates what incentive is required with suitable evidence seen.	4	eg: finding percentage 26% or better or decimal eg: (121 or 122 or better) <b>Or equivalent.</b> (free flight and £250) Or calculates and states incentive B

Que.	Process	Evidence	Mark	Notes
Q4	Finds ELC	Evidence that Excess Luggage concept is understood.	1 or	Attempts to find Excess Luggage for any weight Eg '27 – 15' seen or implied.
		One ELC is seen for one airline <b>and</b> another ELC is seen for a different airline.	2	It must be clear which airline/weight the ELC's refer to
	M1			
	Finds flying Costs	The airline must be identified	1 or	Writes down at least one Flying Cost.
		FT and MA and BJ at least once.	2	Writes down at least 4 Flying costs. Graphical methods are acceptable alternatives.
	M2			
	Compares FC or ELC.  Compares cost of flying	Starts to compare ELC or FC	1 or	Compares the cost for the same luggage weight for at least two airlines. Comparison may be implicit from a table or chart .
		The comparisons must be correct for candidates calculations.	2 or	Flying cost comparisons are made across all three airlines. Comparison may be implicit from a table or chart.
		Establish a range of Flying costs for a set of weights.	3 or	Eg: Its cheaper to fly MA if your luggage is between 15 and 17kg. Could be implicit from table or chart.
		A complete and correct treatment is required.	4	A full specification for all weights $\epsilon [ 15, 27]$
M3				

Que.	Process	Evidence	Mark	Notes
Q5	Applies Ratio Substitution	Substitutes a value for r or x or h into any term of the formula. Or identifies a correct value of r, x or h Or attempts to scale volume of small container.	1 or	May be implicit in a calculation. <b>Or</b> one of (9,6,15) is identified as a value for the large container Or attempts 2:3 after calculating V
		Correct r, x, h for large container.	2	Correct values 9,6,15 Or uses scale 8:27 after calculating small container. Or answer in range [2670,2810]
	M1			
	Evaluates Volume	Calculations may be implicit in larger calculations. Permit values for small container or 'large container'	1 or	Any two elements within a term of the formula are evaluated. For example: $\pi \times 6^2 = 113$ or better Or $\pi \times 4 = 12.6$ or better Allow for premature approximation Allow for rounding
		Permit for small container or 'large container'	2 or	A term of the formula is calculated.
		Finds volume of container	3	An answer in the range [2670, 2810] ignore units.
M2				

Que.	Process	Evidence	Mark	Notes
<b>Q6a</b>	Staff assigned to Time periods  M1	Finds a time period	1 or	1½ <b>or</b> 2½ (hours) seen or implied.
		Uses both time periods	2	Uses 1½ hours and 2½ hours.
	M2	Cinema Staff <b>or</b> Agency staff	1 or	Assigns at least one member of staff to more than one time period correctly.
		Cinema Staff <b>or</b> Agency staff	2	Assigns all Cinema <b>or</b> Agency staff to time periods correctly.
<b>Q6b</b>	Calculates Staff costs.	Makes progress by identifying features.	1 or	(0.3×7) or (26.70 × '8')
			2 or	(0.3×7) and (26.70 × '8')
		Hourly overtime rate for the cinema staff is evidenced. <b>It may be embedded</b> Agency staff costs are evaluated.	3 or	£9.10 and '26.70 × 8' correctly evaluated
		Allow 322.8	4	(£) 322.80

Que.	Process	Evidence	Mark	Notes
Q7	Analyses situation	Finding the office area. Finding what space is currently allowed for the office.	1 or	$20 \times 45$ or $15 \times 35$ seen or implied $5 \times 200$ or $20 \times 75$ seen or implied
		Interprets council regulations	2 or	900 or 525 seen or implied. 1000 or 1500 seen or implied.
	Determines if council regulations are met.	A <b>comparison</b> between space needed to meet council regulations and existing provision.	3 or	Evidence needs to be seen that a comparison can be made. For example: 19 <b>or</b> (7 or 8 or 7... ) seen or implied or equivalent. For example : $1425$ compared with 1000 or equivalent. For example: $1425 \div 75$ or $1425 \div 200$
		We only need one condition not to be met.	4	'council regulations not met'
Q8	Car park area	Allow 'by' for $\times$	1 or	$2.4 \times 4$ or $4.8 \times 2.4$ seen or implied.
	M1		2	$4.8 \times 2.4 \times 4 = (46.08)$ seen or implied
	Disabled feature	Could be seen on a diagram or <b>used correctly</b> in a calculation.	1 or	1.2 wide strips are introduced to either width or length.
		Considers width of space. Must be applied to the longer side	2 or	$(2.4 \times 4) + 1.2n$ where $n \in [1, 9]$ Strict application.
	M2	Area calculation	3	$4.8 \times (9.6 + 1.2n)$ calculated ( ignore units )

Que.	Process	Evidence	Mark	Notes	
Q9	Communicates	Makes a simple statement based upon at least one aspect.	1 or	Eg: Total for St Agnes on Monday is $N_1$ St Cuthberts $N_2$ users over 3 months.	
		Makes a statement/s where a comparison is made <b>or a comparison could have been made</b>	2 or	Eg: More cars use X car park on a Monday than Y car park.  Eg: Total for St Agnes is $N_1$ Total for St Botolphs is $N_2$	
		Statement needs to be referenced to <b>relative</b> use.	3	Eg: Finding the average use of each car park on Monday: 185, 194, 257 <b>and then</b> St A 74% St B 69% St C 59% a statement is made.	
	M1	Processes data	Uses a simple technique	1 or	Max / Min etc. The use may be implicit within a statement.
	M2		Uses standard techniques	2 or	Totals a single aspect Eg: finds the total users for a car park for at least one day. Averages a single aspect. Single bar charts oe
			Uses compound techniques	3	Totals or averages more than one aspect. Eg: Totals for a day then totals each day. Or composite display, percentages, ratios, decimals,...



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