GCSE 2005
March Series

AQA

ASSESSMENT and
QUALIFICATIONS
ALLIANCE

Mark Scheme

Mathematics B (3302)
Module 1 Tier H

Mark schemes are prepared by the Principal Examiner and considered, together with the relevant questions, by a panel of subject teachers. This mark scheme includes any amendments made at the standardisation meeting attended by all examiners and is the scheme which was used by them in this examination. The standardisation meeting ensures that the mark scheme covers the candidates' responses to questions and that every examiner understands and applies it in the same correct way. As preparation for the standardisation meeting each examiner analyses a number of candidates' scripts: alternative answers not already covered by the mark scheme are discussed at the meeting and legislated for. If, after this meeting, examiners encounter unusual answers which have not been discussed at the meeting they are required to refer these to the Principal Examiner.

It must be stressed that a mark scheme is a working document, in many cases further developed and expanded on the basis of candidates' reactions to a particular paper. Assumptions about future mark schemes on the basis of one year's document should be avoided; whilst the guiding principles of assessment remain constant, details will change, depending on the content of a particular examination paper.

The following abbreviations are used on the mark scheme:

M   Method marks awarded for a correct method.

A   Accuracy marks awarded when following on from a correct method.
            It is not necessary always to see the method. This can be implied.

B   Marks awarded independent of method.

M dep   A method mark which is dependent on a previous method mark being
            awarded.

ft   Follow through marks. Marks awarded for correct working following a
            mistake in an earlier step.

SC   Special Case. Marks awarded for a common misinterpretation which has
            some mathematical worth.

oe   Or equivalent.

eeoo   Each error or omission.

MODULE 1   HIGHER TIER   33001H

Note: Probability - Accept fraction, decimal or percentage. Do not accept ratio.
1 out of 3 or 1 in 3 penalise once on whole paper.

1(a)	Attempt at Σfx $(5 \times 16) + (15 \times 10) + (25 \times 11)$ $+ (35 \times 8) + (45 \times 5)$	M1	'f' $\times$ their midpoint within the range At least three products
	their $\dfrac{1010}{50}$	M1 dep	Must be from at least 3 correct midpoints
	20.2	A1	Accept 20 from correct method seen
(b)	Indication of 25th or 25.5th value	M1	
	$10 < t \leq 20$	A1	Accept 10-20

2(a)	There are four quarters in a year	B1	
(b)	$\dfrac{(24+52+83+37)}{4}$ or $\dfrac{196}{4}$	B1	
(c)	$\dfrac{(52+83+37+x)}{4} = 51$	M1	
	$52 + 83 + 37 + x = 204$	M1	or $172 + x = 204$ or $x = 204 - 172$
	32	A1	8 SC1 32 embedded M2

3(a)	Any one correct frequency density seen	M1	Can be implied from histogram
	fds correct 3.4, 5.8, 3.6, 2.4, 0.7	A1	4 or 5 correct fds or implied
	Correctly drawn histogram	B1	$\pm \dfrac{1}{2}$ sq heights "ruled"
(b)	$\dfrac{8}{10} \times 24 + 14$	M1	or counting appropriate squares and scaling eg 5 □s = 1 person $\dfrac{166}{5} \Rightarrow$ M1
	33 with or without working	A1	Accept 34 from 33.2 method Do not accept 34 with no working

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4(a)	$\frac{22}{48} \times \frac{21}{47}$	M1	
	$\frac{77}{376}$ or 0.205 (accept 0.20 or better)	A1	
(b)	$\frac{32}{48} \times \frac{31}{47}$ or $\frac{16}{48} \times \frac{15}{47}$	M1	Combination of two girls or two boys
	$\frac{62}{141} + \frac{5}{47}$	M1	Adding two correct products
	$\frac{77}{141}$ or 0.546	A1	$\frac{1232}{2256}$
			Alternative answer all SC3 $\left(\frac{22}{48}\right)^2 = \frac{484}{2304} = \frac{121}{576} = 0.210$ $\left(\frac{32}{48}\right)^2 + \left(\frac{16}{48}\right)^2 = \frac{5}{9} = 0.5\dot{5}$

5	$\frac{2}{5} \times 1000$ or 400 (girls) or $\frac{3}{5} \times 1000$ or 600 (boys)	M1	Alternative method $\frac{2}{5} \times \frac{1}{10}$ or $\frac{2}{50}$ OR $\frac{1}{6} \times \frac{3}{5}$ or $\frac{3}{30}$
	$\frac{1}{10} \times 400$ or 40 girls	M1	$\frac{2}{50} \times 1000$ or 40 girls
	$\frac{1}{6} \times 600$ or 100 boys	M1	$\frac{3}{30} \times 1000$ or 100 boys
	140 students	A1	

6(a)	46	B1	
(b)	Plotted at upper bounds	B1	
	Heights all correct	B1	$\pm \frac{1}{2}$ sq
	Points joined by smooth curve or straight line polygon	B1	Condone not joined to 0 Must be an increasing function
(c)	170-150 If mr scale for 170 clear evidence must be seen of reading at correct place (eg lines or mark)	M1	
	20	A1 ft	Follow through from an increasing curve or polygon

33001H

7(a)	There are different numbers of people in each age group or There are different numbers of men and women or The same proportion of each type are taken	B1	or similar reason which gives the idea of proportion
(b)	i) $\frac{265}{1000} \times 50$	M1	or $\frac{265}{20}$ seen ($\frac{270}{20} \Rightarrow$ M1A0) Look for working even for 13)
	13	A1	Answer only of 13.25 implies M1A0
	ii) Their $\frac{"610"}{1000} \times 50$	M1	oe
	Men 31 and women 19 **or** men 30 and women 20 from fully correct method	A1	30.5, 19.5 $\Rightarrow$ M1A0

8	$\frac{2}{3} \times \frac{2}{3}$ or $\frac{3}{4} \times \frac{3}{4}$ or $\frac{2}{3} \times \frac{3}{4}$	M1	anywhere or $\frac{2}{3} \times \frac{1}{4}$ or $\frac{1}{3} \times \frac{3}{4}$
		M1 dep	anywhere　　other pair
	$\frac{2}{3} \times \frac{2}{3} \times \frac{3}{4} \times \frac{1}{4}$ or $\frac{2}{3} \times \frac{2}{3} \times \frac{1}{4} \times \frac{3}{4}$ or $\frac{2}{3} \times \frac{1}{3} \times \frac{3}{4} \times \frac{3}{4}$ or $\frac{1}{3} \times \frac{2}{3} \times \frac{3}{4} \times \frac{3}{4}$	M1	any one
	Addition of 4 correct quad products	M1 dep	dependent on all 3 M1s
	$\frac{5}{12}$	A1	Use of decimals 0.66 or 0.67 or better