

# GCSE 2004

## *November Series*



## Mark Scheme

### Mathematics B (3302)

#### *Module 1 Tier H*

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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.

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**The following abbreviations are used on the mark scheme:**

<b>M</b>	Method marks awarded for a correct method.
<b>A</b>	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
<b>B</b>	Marks awarded independent of method.
<b>M dep</b>	A method mark which is dependent on a previous method mark being awarded.
<b>ft</b>	Follow through marks. Marks awarded for correct working following a mistake in an earlier step.
<b>SC</b>	Special Case. Marks awarded for a common misinterpretation which has some mathematical worth.
<b>oe</b>	Or equivalent.
<b>eeoo</b>	Each error or omission.

**MODULE 1 HIGHER TIER****33001H****Note: Probability - Accept fraction, decimal or percentage. Do not accept ratio.**

eg 1 out of 3 or 1 in 3 penalise once on whole paper.

1(a)	i) $0.6 \times 10$	M1	$\frac{0.6}{10} \times 100$	M0
	= 6	A1	M1 seen then $\frac{6}{10} \rightarrow$ penalise once on whole paper	
	ii) $0.44 \times 50$	M1	Allow M1 for $0.48 \times 50$ (misread)	
	= 22	A1		
(b)	0.4	B1	oe $1 - 0.6 = 0.4$	B0
(c)	i) 2	B1	$\frac{2}{5} \rightarrow$ penalise if not already penalised in (a)	
	ii) $0.4 \times 0.4$	M1		
	= 0.16	A1 ft	ft their (b) which must be a probability or correct	
2(a)	54	B1	Accept 53 - 55 inclusive	
(b)	Locating and subtracting correct quartiles eg $74 - 40$	M1	Allow M1 for $72 - 40$ seen or implied or '67' - 40	
	= 34	A1	Accept 33 - 35 inclusive $32 \rightarrow$ $27 \rightarrow$	M1A0 M1A0
3(a)	$186 \times \frac{200}{1450}$	M1		
	= 25.6...	A1	Note $\frac{200}{1450} = 0.14 \times 186 = 26.04 \rightarrow$ M1A0 $\frac{1450}{200} = 7.25, 7.25 \times 26 = 188.5$ $7.25 \times 25 = 181$ so closer to 26 $\rightarrow$ M1A0	
(b)	$725 \times \frac{200}{1450}$	M1	oe one of them W, B or other or 100 linked with 'white' etc $\rightarrow$	M1
	W = 100, B = 53.5..., O = 20.8...	A1	Decimals correct or 100, 54, 21	
	W = 100, B = 53, A = 26, O = 21 or W = 100, B = 54, A = 26, O = 20	A1	Correct rounding	

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4	Recognising 000, 003, 006, ...999 are multiples of 3	B1	or $\frac{1}{3}$ of 999 or 1000 or $\frac{1}{3}$ are multiples of 3 or recognising multiples of 12
	Obtaining 333 or 334 possibilities	B1	
	Obtaining 83 or 84 possible multiples of 3 and 4	M1	
	$\frac{84}{334}$ or 0.251... or $\frac{83}{333}$ or 0.249...	A1	oe $\frac{42}{167}$ Look for $\frac{249}{999} = \frac{83}{333}$ Incorrect method M0

5(a)	A Negative	B1	
	B Zero	B1	Accept: None or No
(b)	i) Suitable line	B1	From $x = 20$ to $x = 70$ (20, 10 - 24) to (70, 50 - 64) inclusive
	ii) About "60"	B1 ft	ft line if correct $\pm \frac{1}{2}$ square 56 - 66 inclusive if no line

6(a)	$\frac{2}{5}$ seen in part (a)	B1		
	One pair of branches labelled somehow correctly and with correct probabilities	B1	Accept penalty, no penalty for score, no score (but not penalty 1, penalty 2)	
	Fully correct	B1	Condone '1st penalty' and '2nd penalty' headings missing No labels but otherwise fully correct → SC2	
(b)	$\frac{3}{5} \times \frac{2}{5}$ or $\frac{2}{5} \times \frac{3}{5}$	fit from correct structure if unambiguous (ie labelled) and all are probabilities	M1	One correct product seen or $\frac{6}{25}$
	$\frac{3}{5} \times \frac{2}{5} + \frac{2}{5} \times \frac{3}{5}$		M1	Addition of 2 correct products (or $\times 2$ )
	$= \frac{12}{25}$		A1	oe 0.48 If answer given in (b) is wrong and there is no working in (b), credit can be given if clear evidence seen in (a) leads to the answer given in (b)

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7(a)	Any correct method for frequency density seen once eg $\frac{1}{5}$	M1	May be implied from a correct frequency or bar (excluding zero)
	5 or 6 fds correct 0.2, 0, 0.9, 0.5, 0.8, 0.2	A1	
	Heights and widths correct	A1	
(b)	Boys range > girls range	B1	
	Boys average greater than girls average	B1	

8	$(\frac{1}{4} \times \frac{1}{4} \times \frac{3}{4})$ or $(\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4})$	M1	Either triple product
	$(\frac{1}{4} \times \frac{1}{4} \times \frac{3}{4}) \times 3$	M1	
	$(\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}) \times 4$ or $(\frac{1}{4} \times \frac{1}{4} \times \frac{3}{4}) \times 4$	M1	Note $\frac{1}{4} \times \frac{1}{4} \times \frac{3}{4} \times 12 \rightarrow$ M3
	$(\frac{1}{4} \times \frac{1}{4} \times \frac{3}{4}) \times 3 \times 4$ $+ (\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}) \times 4$	M1	
	$= \frac{5}{8}$	A1	Alternative method $(\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4})$ M1 $(\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}) \times 4 \times 3 \times 2$ M2 $1 - (\frac{1}{4} \times \frac{1}{4} \times \frac{1}{4}) \times 4 \times 3 \times 2$ M1 dep $= \frac{5}{8}$ A1