



## **General Certificate of Secondary Education**

# **Mathematics 4302**

## *Specification B*

### **Module 1 Tier H 43001H**

# **Mark Scheme**

*2008 examination – March series*

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**

**43001H**

**Note: Probability - Accept fraction, decimal or percentage. Do not accept ratio.**

1(a)	Plotting all points correctly $\pm \frac{1}{2}$ square	B2	B1 for 5 or 6 points correct $\pm \frac{1}{2}$ square (ignore extras)
1(b)	Strong positive	B1	or fairly strong or quite strong
1(c)	Straight ruled line passing on or between (21, 40) and (25, 36) and between (15, 20) and (15, 30) extending from 11 to 32 on length axis	B1	
1(d)	About "33"	B1 ft	ft their "straight" line with positive gradient ( $\pm \frac{1}{2}$ sq) not zig-zag
1(e)	Value outside given range of data	B1	Danger of extrapolation Not "not enough data"

2(a)	$(1 \times 42) + (2 \times 26) + (3 \times 12) + \dots$	M1	144 At least 3 products seen or $42 + 52 + 36 + \dots$									
	their $\frac{144}{83}$	M1 dep										
	1.7(3...)	A1	Accept 2 from correct working seen									
2(b)	Please tick which days you are prepared to share your car	B1	Suitable question about days									
	<table style="width: 100%; border: none;"> <tr> <td style="text-align: center;">Mon</td> <td style="text-align: center;">Tues</td> <td style="text-align: center;">Wed</td> <td style="text-align: center;">Thurs</td> <td style="text-align: center;">Fri</td> </tr> <tr> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </table>	Mon	Tues	Wed	Thurs	Fri	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	B1
Mon	Tues	Wed	Thurs	Fri								
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>								

3(a)	Plotting 4 MA's at midpoints Aut 06, Spr 07, Sum 07, Aut 07	B1	
	Correct heights $\pm \frac{1}{2}$ sq	B1	
3(b)	MA in Spring 2008 is 470 – 490 seen	B1	Cannot use seasonal component method May be in box at top
	$\frac{350 + 447 + x}{3} = \text{their } 480$	M1	
	613 – 673	A1 ft	

4	$\frac{21}{(21+14+10+5)}$ or $\frac{14}{(21+14+10+5)}$	M1	Mark method that leads to answer
	$\frac{21}{50} \times \frac{20}{49}$ or $\frac{14}{50} \times \frac{13}{49}$	M1	
	$\left(\frac{21}{50} \times \frac{20}{49}\right) + \left(\frac{14}{50} \times \frac{13}{49}\right)$	M1	
	$\frac{43}{175}$	A1	oe 0.24(571...) $\frac{602}{2450}$ Not 0.25 with no working

5(a)	Linear scales on both axes	B1	Vertical scale must start from zero (or implied)
	All heights correct	B1	Within the classes Condone 0 missing
	Histogram - all widths correct equal widths, no gaps	B1	Freq polygon - midpoints joined with straight lines Accept 30 - 35, 35 - 40, ...
5(b)	$8 + 6 + 1$ or 15	M1	
	$\frac{\text{their } 15}{20} \times 80$	M1 dep	or $\left(1 - \frac{5}{20}\right) \times 80$ or scaling by a factor of 4
	60	A1	Watch for $80 - 20$ ; $\frac{60}{80}$ lose A1
5(c)	Because the figures are from a biased sample	B1	Only sent to heads of department

6(a)	36	B1	
6(b)	37 - 35	M1	
	2	A1	
6(c)	The median neck measurement is much bigger for the men than the women ( $40 > 36$ )	B1	On average men have bigger neck measurements. Figures correct if given
	The range (or interquartile range) for the men is bigger than for the women ( $11 > 9$ ) or ( $4 > 2$ )	B1	The men's neck measurements are much more spread out than the women's. Figures correct if given

7(a)	No, because the spinner can land on any of the 3 colours each time it is spun	B1	Not “random”
7(b)	$\frac{2}{8} \times \frac{2}{8}$	M1	
	$\frac{1}{16}$	A1	oe

8(a)	$0.4 \times (1 - 0.7)$ or $(1 - 0.4) \times 0.7$	M1	Either correct product
	$0.4 \times (1 - 0.7) + (1 - 0.4) \times 0.7$	M1 dep	
	0.54	A1	
8(b)	$\left(\frac{2}{10} \times 12\right) + (10 \times 0.8)$ $+ (10 \times 0.5)$	M1	
	15 or 16	A1	Integer