



General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 1 Tier H 33001H THREE TIER

Mark Scheme

2007 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.

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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	One correct midpoint seen and used correctly	M1	At least one product. Sight of 120, 500, 420 or 360 \Rightarrow M1
	$(5 \times 2) + (15 \times 8) + (25 \times 20) + (35 \times 12) + (45 \times 8)$ or 1410	M1	$\sum fx$ using x on or between the class boundaries. All five products
	"1410" \div 50	M1 dep	on 2nd M1
	28.2	A1	28 with correct working or no working \Rightarrow M3A0 (unless 28.2 seen)
2	0.11×200 or 22	M1	$0.26 + 0.11$ or 0.37
	$200 - 74$ or $200 - (22 + 52)$	M1 dep	$[1 - (0.26 + 0.11)] \div 3$ or 0.21
	"126" \div 3	M1 dep	0.21×200
	42	A1	
3(a)	$2.1 - 1.6$	M1	Accept 2.08 – 2.12 and 1.58 – 1.62
	0.5	A1	ft from values seen in range above
3(b)	$100 - 88$	M1	Allow 100 – 87 and 100 – 89
	12	A1	11 or 13 with no working \Rightarrow M1A0
4(a)	Random sampling	B1	
4(b)	$\frac{45}{300} \times 25$	M1	One correct method seen
	4, 6, 8, 7 or 3, 7, 8, 7 or 4, 7, 8, 6	A2	A1 for 3.75, 6.5, 8, 6.75 or 4, 7, 8, 7

5	$\frac{7}{15} \times \frac{3}{14}$ or $\frac{7}{15} \times \frac{5}{14}$ or $\frac{3}{15} \times \frac{5}{14}$	M1	Alternative method $\frac{7}{15} \times \frac{6}{14}$ and $\frac{3}{15} \times \frac{2}{14}$ and $\frac{5}{15} \times \frac{4}{14}$
	$\frac{7}{15} \times \frac{3}{14} \times 2$ and $\frac{7}{15} \times \frac{5}{14} \times 2$ and $\frac{3}{15} \times \frac{5}{14} \times 2$	M1 dep	Adding above products $\frac{42}{210} + \frac{6}{210} + \frac{20}{210}$
	$\frac{1}{7} + \frac{1}{5} + \frac{1}{3}$ (Adding the 3 double products)	M1 dep	1 – their $\frac{68}{210}$
	$= \frac{142}{210}$ or $\frac{71}{105}$ or 0.67... or 0.68	A1	$\frac{142}{225}$ or 0.63... SC2

6(a)	Strong positive	B1	Accept Good or High positive
6(b)	The line may change/there is no data near 15	B1	

7(a)	0.5×10	M1	oe
	5	A1	$\frac{5}{10}$ no working \Rightarrow M0A0
7(b)	0.45	B1	
	Larger sample, 60 goes/the last one	B1	

8(a)	Plotted at correct midpoints	B1	$\pm \frac{1}{2}$ sq At least 5 plotted all correct
	Heights correct and joined with straight line within correct class interval	B1	$\pm \frac{1}{2}$ sq Ignore below first point and above last point
8(b)	Males ages are more spread out (varied because range is bigger)	B1	or opposite for females Comment about spread in context of question
	Average age is greater for males (because mode/mean/median is bigger)	B1	or opposite for females Comment about average in context of question

9(a)	1st pair of branches with correct labels and correct probs	B1	
	2nd set of branches labelled with even odd on each pair	M1	
	2nd set of branches with correct probs	A1	Branches labelled with correct probabilities but no labels SC1
9(b)	$\frac{2}{5} \times \frac{2}{5}$ or $\frac{2}{5} \times \frac{3}{5}$ or $\frac{3}{5} \times \frac{2}{5}$	M1	or $\frac{3}{5} \times \frac{3}{5}$
	$\frac{2}{5} \times \frac{2}{5} + \frac{2}{5} \times \frac{3}{5} + \frac{3}{5} \times \frac{2}{5}$	M1 dep	$1 - \frac{9}{25}$
	$\frac{16}{25}$ or 0.64	A1	

10	1 sq cm = 5 babies	M1	150 little squares = 30
	5 small sqs (1 line of 5) = 1 baby or under 2 = 4.2 squares	M1	1 little square = 0.2 or $\frac{30}{150}$
	$3 \times 5 + 6 \times 1$ or 4.2×5	M1	105×0.2
	21	A1	