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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 1 Tier H 33001H THREE TIER

Mark Scheme

2007 examination - June 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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Dr Michael Cresswell Director General

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)	4 or 5 correct midpoints seen	M1	or implied
	$\sum fx$ at least two products with intention to sum	M1	Accept incorrect midpoints but must be within classes including boundaries Note: Not class widths throughout Note: 1840 or 2640 $\Rightarrow$ M1
	$\sum fx$ 4 or 5 "correct" products summed with intention to divide by 80	M1 dep	dep on 2nd M1 $\left(\frac{"2240"}{80}\right)$ $\frac{1840}{80}$ or $\frac{2640}{80} \Rightarrow$ M2
	28	A1	
1(b)	Locating middle position as 40th or 40.5th	B1	
	Cumulating to 42 or 38 + 2…	B1	Accept stating that the 40th value lies in $20 < t \leq 30$ class interval

2(a)	$\frac{1}{6}$ and $\frac{5}{6}$ on first pair of branches correctly	B1	
	$\frac{1}{3}$ and $\frac{2}{3}$ on each second pair of branches correctly	B2	B1 any 2 correct probabilities in second throw column
2(b)	$\frac{1}{6} \times \frac{1}{3}$	M1 ft	ft provided both are probabilities
	$\frac{1}{18}$	A1	oe 0.056 or better (not 0.05)

3(a)	Plotting at least 3 correct midpoints $\pm \frac{1}{2}$ square	B1	Cannot translate by 2 cm
	Heights correct $\pm \frac{1}{2}$ square	B1	All four
3(b)(i)	(About) 2760 or correct	B1 dep ft	ft straight trend line correctly read halfway between Q2 and Q3 of 2006 dep on 1st B1
3(b)(ii)	$\frac{(3200+3000+2200+x)}{4}$ = "2760"	M1	or spotting each Q_{06} is 640 more than Q_{05} [not +440 on Q3 06]
	2640	A1 ft	or spotting that differences between quarters continue or use seasonal component correctly

4	$\frac{26}{(14+26+8+52)}$	M1	$\frac{26}{100}$ or 0.26 or $\frac{26}{99}$* *in pairs
	$\frac{(8+52)}{(14+26+8+52-1)}$	M1	$\frac{60}{99}$ or 0.61 or better or $\frac{60}{100}$*
	$\frac{26}{(14+26+8+52)} \times \frac{(8+52)}{(14+26+8+52-1)} \times 2$	M1 dep	dep on both M1s
	$\frac{52}{165}$	A1	oe 0.32 or better

5	Points plotted at correct midpoints and joined by "straight" lines	B1	
	All four heights correct (within classes)	B1	

6(a)	$\frac{4}{10}$	B1	oe
6(b)	$\frac{4}{10} \times 500$	M1	
	200	A1	
6(c)	Hannah, with any reason	B1	
	Because she has taken a larger sample	B1	Not because she has more yellows

7	Locating quartiles from graph	M1	eg Lines on graph including to h axis OR 110 and 160 seen
	(Red kangaroos IQR =) 50 cm	A1	
	(Grey kangaroos IQR =) 35 cm	B1	
	IQR red > IQR grey	B1	oe

8(a)	$\frac{8}{80} \times 10$	M1	Any one correct method seen
	1, 3, 6	A2	Correct decimals or fractions only gets A1
8(b)	$\frac{15}{45} \times 30$	M1	
	10	A1	

9	11 cm^2 = 55 or 1 cm^2 = 5	M1	oe 5 squares = 1 car
	Obtaining correct fd scale 1 cm = fd1	M1	[or using area $1.6 \times 5.2 + 0.6 \times 7.8$] = 13 cm^2 or 325 squares
	$(8 \times 5.2) + (3 \times 7.8)$	M1	or 41.6 + 23.4 [total area $\times 5$] $325 \div 5$
	65	A1	Not 26 + 39 = 65!