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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 4302

Specification B

Module 1 Tier H 43001H

Mark Scheme

2008 examination - November 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:

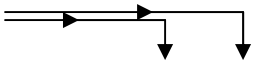
M	Method marks awarded for a correct method.
A	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
B	Marks awarded independent of method.
M dep	A method mark which is dependent on a previous method mark being awarded.
ft	Follow 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 43001H

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

1	$\sum fx$ at least two correct products with intention to sum	M1	eg (0 +) …48 + 98+… 305 $\Rightarrow$ M1 280
	Their total ÷ 160	M1 dep	Not $\frac{160}{280}$ unless 1.75 seen
	1.75	A1	Accept 1.8 from correct working seen (not 2) Ignore subsequent working 1.90625 or 1.9 or better $\Rightarrow$ SC2 without working Mark method that leads to answer

2(a)	Correct total number of sixes 24, 27, 31	B1	All 3 correct
	Any correct relative frequency seen in the correct cell	M1	eg $\frac{"24"}{80}$ (= 0.3)
	0.3, 0.3, 0.31	A1	All 3 correct oe
2(b)	Yes ticked **with** any reason	B1	Or Yes on answer line or biased Not 'don't know'
	Because their "0.31" > $\frac{1}{6}$	B1	

3(a)	30, 43, 60	B1	
3(b)	4 or 5 plots at ucb's ($\pm \frac{1}{2}$ sq)	B1	Must be an increasing function and not a straight line (ignore <4)
	4 or 5 of their heights correct within the classes	B1 ft	Must be an increasing function and not a straight line
	Smooth curve or polygon and **fully correct**	B1	Must be an increasing function and not a straight line
3(c)	Locating correct quartiles from graph Can now ft straight line (increasing)	M1	 $\pm \frac{1}{2}$ sq
	Sarfraz IQR ≈ 4.3 (not MR)	A1	or correct box plot for Sarfraz
	Becki IQR = 3	B1	Condone 9.25 – 6.25 = 3 (allow as correct)
	Becki is correct 3 < 4.3 Depends on correct working in (3c)	B1	oe No working Yes, B is correct smaller IQR $\Rightarrow$ SC2 SC2 for saying Becki is incorrect because the ranges are the same

4(a)	Tree diagram fully correct	B2	Any 3 probabilities correct B1
4(b)	$\frac{7}{10} \times \frac{6}{9}$	M1	ft their tree with any probabilities seen Can be on tree
	$\frac{42}{90}$	A1	oe $\frac{7}{15}$ or 0.47 or better

5(a)	As the journey lengths increase the taxi-fare increases	B1	Positive (correlation) oe
5(b)	Suitable "straight" line	B1	
5(c)	Approx £9 $\pm \frac{1}{2}$ sq must be £ and pence if pence included	B1 ft	ft an increasing line or curve or zig-zag
5(d)	100 miles is outside the range of the data (NOT off the graph)	B1	Correlation may change as journey length increases beyond the given data range or danger of extrapolation

6	Suitable Key (< 100)	B1	eg 2 | 6 represents 26 mm
	Stem correct 4, 5, 6, 7, 8, 9	B1	Ignore extreme values (stem vice versa)
	4 | 3 5 | 8 6 | 2 7 | 0 9 8 | 2 6 9 9 9 | 5 7 7	B1	Ordered leaves

7(a)	1 – (0.4 + 0.25 + 0.05)	M1	or 0.3
	$\frac{1}{2} \times 0.3$	M1 dep	oe
	0.15	A1	0.15, 0.15 in table only 3 0.15 in D but wrong answer ⇒ 2 marks
7(b)	0.4 + 0.25	M1	
	0.65	A1	

8(a)	Any one fd correct 0.5, 0.9, 2.5, 2.0, 0.8, 0.1	M1	Seen or implied
	5 or 6 of 'their' heights correct ($\pm \frac{1}{2}$ sq)	M1 dep	Must be on given graph within or on boundaries
	Fully correct	A1	
8(b)	$\left[\frac{2}{10}\times 25\right] + \left[\frac{6}{10}\times 20\right]$	M1	oe
	17	A1	

9	$\frac{260}{(260+170+70)} \times 2000$	M1	Any correct method seen or implied Not $\frac{260000}{500} \times 2000$
	NUT 1040 ATL 680 NATFHE 280	A2	A1 one or two correct Ignore subsequent working Correct answer rounding to 1000, 700, 300