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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302

Specification B

Module 1 Tier I 33001I 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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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 INTERMEDIATE TIER 33001I

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)	<table><tr><th></th><th>1</th><th>2</th><th>3</th><th>4</th><th>5</th><th>6</th></tr><tr><th>2</th><td>3</td><td>4</td><td>5</td><td>6</td><td>7</td><td>8</td></tr><tr><th>4</th><td>5</td><td>6</td><td>7</td><td>8</td><td>9</td><td>10</td></tr><tr><th>6</th><td>7</td><td>8</td><td>9</td><td>10</td><td>11</td><td>12</td></tr></table>	B2	B1 one row correct
1(b)	0	B1	Accept zero, no chance, impossible $\frac{0}{18}$. No ft
1(c)	There are two 6's in the scores	B1	No ft
	There are 18 scores altogether	B1	

2(a)	10 | 5 9 11 | 1 8 9 12 | 1 2 5 6 13 | 3 4	B3	B2 fully correct ordered leaves attached to 'correct' stem B1 for correct stem B1 any two correct ordered leaves, attached to stem, or if fully correct but unordered leaves
2(b)	121	B1	
2(c)	Increases	B1	

3(a)	$30 < t \leq 40$	B1	
3(b)	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	

4(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
4(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)

5(a)	6 as numerator of a fraction <1	M1	
	$\frac{6}{15}$	A1	oe
5(b)	$\frac{9}{15}$	B1 ft	oe ft = (1 – a)

6	180º or 120º or 60º seen or implied	B1	
	Exactly 3 sectors correct ±2º	B1	
	Correctly labelled	B1	In order of size, 3 sectors only

7(a)	All seven points plotted $\pm\frac{1}{2}$ square	B2	5 or 6 points correct B1
7(b)	Straight line passing on or between (1000, 100 - 200) and (5500, 500 - 600) From 1000 to 5500 on *x*-axis	B1	
7(c)	As the distance increases the cost increases	B1	Positive correlation not describing the (900, 140) point
7(d)	480 $\pm\frac{1}{2}$ square	B1 ft	ft their increasing line (strict)

8(a)	Question is leading	B1	Suggestive or biased
8(b)	Suitable question:	B1	eg Do you think eating fast foods is: Accept "do you think …" "don't you think …"
	Suitable response boxes:	B1 dep	eg [a] healthy [b] unhealthy [c] ok [d] don't know
8(c)	Points plotted at correct midpoints and joined by "straight" lines	B1	
	All four heights correct (within classes)	B1	

9	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