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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302
Specification B

Module 1 Tier I 33001I

Mark Scheme

2005 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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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	Any correct method seen eg $\frac{25}{45} \times 360$ or 25×8 etc or sight of a correct angle	M1	Can be implied from a correct exact angle on pie chart that is correctly labelled or has no labels at all Only 4 sectors
	All 4 correct angles 32°, 48°, 80°, 200° seen or implied	A1	
	Accurate sectors drawn ± 2°	A1	
	Correct labelling according to size of sector	B1	H, G, S, D in smallest to largest sectors all 4 labels
	Clear incorrect method scores M0A0A0		Mark pie chart first

2(a)	$\sum fx$	M1	eg $0 \times 2 + 1 \times 15 + 2 \times 12...$ seen (or $0 + 15 + 24...$) at least 3 products summed
	= 174	A1	
(b)	their total in (a) ÷ 60	M1 dep	Dep on first M1 Can be implied from correct ft ans
	= 2.9	A1	Accept 3 from correct working seen

3(a)	0.4 + 0.2	M1	
	(=) 0.6	A1	
(b)	1 – (0.4 + 0.2 + 0.3)	M1	(Measure from diagram 36° $\frac{36}{360}$ M1A1) $\frac{35}{360}$ M1 $\frac{36 \pm 2}{360}$ M1
	(=) 0.1	A1	
(c)	0.4 + 0.3	M1	oe $0.4 \times 250 = (100)$ or $0.3 \times 250 = (75)$ $0.4 + 0.3 \times 250$ M1 no brackets
	(their) 0.7×250	M1 dep	Addition $0.4 \times 250 + 0.3 \times 250$
	(=) 175	A1	Penalise incorrect notation $\frac{175}{250}$ once on paper
			175 out of 250 OK

4(a)	Any correct <u>method</u> seen eg $\frac{(38+60)}{2}$	M1	+11 → 2 answers correct Clear incorrect method → No marks
	48, 49, 51, 53 Mark boxes first	A1	May not be in boxes OK
(b)	Plotting the MA's at midpoints	B1	At least four
	Plotting at their correct heights	B1 ft	$\pm \frac{1}{2}$ sq ft boxes first or unambiguous working in (a) All 5 plots ± 2 cm translation 2 cm space Must be on the graph paper
(c)	Trend is increasing It's going up	B1	

5(a)	35	B1	Allow 3|5
(b)	9	B1	Allow 0|9
(c)	31	B1	Allow 3|1

6	Range for girls is higher without incorrect working seen ie not 7 > 6	B1	May say 8 > 6 OK Must be a comparison not 8 – 6 = 2
	Mean of girls is 7	B1	Correct calc of mean
	Mean of girls is lower with some calc of mean	B1 ft	their calc $\frac{"70"}{10}$ or good attempt at mean "7.1" etc with correct comparison ft

7(a)	6 points plotted accurately	B2	($\pm \frac{1}{2}$ sq) Ignore extras ignore sticks B1 for 5 points correct
(b)	As the house values increase in 2000 the house values in 2004 also increase	B1	Accept positive correlation or as one goes up the other goes up
(c)	Sensible ruled line of best fit Negative line	B1 B0	On or between (30, 60) and (40, 60) and on or between (60, 100) and (70, 140) and extending from 40 to 80 on x-axis
	About £150 (000) ($\pm \frac{1}{2}$ sq)	B1 ft	Line must have a positive gradient, their line value $\pm$ £2000
			Ignore a negative line for ft Alternative method No line drawn but estimate 144 (000) → 160 (000) inclusive scores B2 Negative line B0B1

8	0.22×200	M1	Alternative method $\frac{86}{200}$ or = 0.43 M1
	= 44	A1	1 – ((their) 0.43 + 0.22) = 0.35 M1
	200 – ((their) 44 + 86)	M1 dep	(their) 0.35×200 M1
	= 70	A1	= 70 Penalise incorrect notation $\frac{70}{200}$ once on paper A1
	Do not accept extra working $\frac{70}{2}$		

9(a)	0.3 and 0.7 correctly located on first pair of branches	B1		
	0.3 and 0.7 correctly located on both second pairs of branches	B1		
(b)	0.3×0.7	M1		ft if unambiguous
	$0.3 \times 0.7 + 0.7 \times 0.3$ adding exactly 2 correct products	M1	or $2 \times 0.3 \times 0.7$	
	= 0.42	A1	If no working in b) ans to b) could $\Rightarrow$ M1M1 from working shown in a) or $\Rightarrow$ M1 from working shown in a) Method must be shown or clearly implied	