

### **General Certificate of Secondary Education**

## Mathematics 3302 Specification B

Module 5 Paper 2 Tier I 3300512

# **Mark Scheme**

#### 2005 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.

#### The following abbreviations are used on the mark scheme:

Μ	Method marks awarded for a correct method.
Α	Accuracy marks awarded when following on from a correct method. It is not necessary always to see the method. This can be implied.
В	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 5 Paper 2	INTERMEDIATE TIER	33005/12
MODULE 5 Taper 2	INTERVIEDIATE TIER	55005/12

1(a)	4	B1	+ 1 mm
1(b)	5 cm	M1	$\pm 2 \text{ mm}$
	1.25	A1	± 0.05 km
1(c)	(0)35	B1	± 2°
	1		1
2(a)	<i>x</i> + 1	B1	oe Must be correct letter
2(b)	<i>y</i> – 2	B1	oe Must be correct letter
2(c)	17.5	B1	
[		1	
3	Angle 70°	B1	± 2°
	3.5 cm side	B1	± 2 mm
	One parallel side	B1	within 2°
	Complete parallelogram	B1	
		Γ	
4(a)	21 (+) - 8	M1	
	13	A1	
4(b)	(+) 25 seen	M1	
	34	A1	
4(c)	$6.4 + 3 \times 4.2 (= 19)$	M1	
	their 19 ÷ 5	M1 dep	
	3.8	A1	Allow embedded answer
[		1	
5(a)	83	B1	
5(b)	<i>n</i> + 8	B1	
	<i>n</i> + 9	B1	Allow one mark if transposed
5(c)	n + their $(n + 8)$ + their $(n + 9)$	M1	Provided $n \pm k$ in both boxes
	3 <i>n</i> + 17	A1	
5(d)	143 – 17 or 126 seen	M1	T & I $\rightarrow$ 42 gets 2 marks
	42	A1	Embedded answer M1A0

6	98	B1	
	Alternate (angles)	B1	or correct combination of eg corresponding angles + adjacent angles Do not accept Z angles
7(a)	Attempt at one relevant rectangle	M1	Addition $5.6 \times 2.5 (= 14)$ or $4.7 \times 1.8 (= 8.46)$ or $7.2 \times 1.8 (= 12.96)$ or $3.8 \times 2.5 (= 9.5)$ Subtraction $5.6 \times 7.2 (= 40.32)$ or $4.7 \times 3.8 (= 17.86)$
	Attempt at second rectangle and addition or subtraction	M1	Must pair with first
	22.46 or 22.5	A1	If 3 rectangles used, second M1 awarded if all 3 attempted and added
7(b)	5x + 3 + 2x + 4 + x + 4 + 2x + 3	M1	Allow 2 terms missing or incorrect
	10x + 14	A1	
	their $(10x + 14) = 29$	M1 dep	oe
	1.5	A1	
	Alternative Method		
	5x + 2x + x + 2x	M1	oe Allow 1 term missing
	29-3-3-4-4 (= 15)	B1	oe Allow 1 term missing
	their $(10x)$ = their $(15)$	M1	
	1.5	A1	Answer 2.3 gets M1B0M1A0
	2		2
8	$\pi \times 5.5^2 (= 95.03 \dots)$	M1	Allow $\pi \times 11^2$ (= 380.1)
	$11^2$ – their 95.03	M1	Must have used $\pi$
	25.9 to 26.02	A1	
	26	B1	Independent mark for rounding a previous answer to the nearest whole number

9(a)	24	B1	Allow embedded answers throughout Q 9 provided they are not contradicted on the answer line
9(b)	3y = 4 + 11 or 15	M1	
	5	A1	
9(c)	4z + z or $3 - 8$ seen	M1	
	5z = -5	M1	
	-1	A1	
9(d)	$2t + 5 = 7 \times 3$ or 21	M1	or $\frac{2t}{3} + \frac{5}{3} = 7$
	2t = 21 - 5 or 16	M1 dep	$\frac{2t}{3} = 7 - \frac{5}{3}$
	8	A1	

10	9 or 2 seen	B1	May be on diagram but not as answer
	their $9^2$ + their $2^2$	M1	
	$\sqrt{\text{their 85}}$	M1 dep	
	9.()	A1	
	9.22	B1 ft	

11	$x^2 + 5x - 3x - 15$	M1	Allow mark if 3 terms correct
	$x^2 + 2x - 15$	A1	$x^{2} + 2x + 2$ gets M1A0

12(a)	Cyclic (quadrilateral)	B1	
12(b)	$\angle$ BCE = 78° or $\angle$ C = 78°	B1	May be seen on diagram
	$\angle$ BCD = 102°	B1	May be seen on diagram
	(x =) 78	B1	
	<i>Alternatives to be marked as follows</i>		
	Use of cyclic quad properties $\rightarrow$ finding a correct angle	B1	eg $\angle D = 67$
	Finding third angle in a triangle	B1	eg $\Delta$ ADE
	Correct answer	B1	

13(a)	(p + a)(p + b) where $ab = 12$	M1	a and b must be positive
	(p+3)(p+4)	A1	
13(b)	-3 and -4	B1	ft from answer to (a)
14	2 points from (0, -4) (1, -2) (2, 0) (3, 2) (4, 4)	M1	May not be seen, so may be inferred from Al below
	Segment of correct line intersecting given line	A1	
	x = 2.55, y = 1.1	A1	Each $\pm 0.1$
15(a)	Cos 22° or sin 68° seen	M1	
	$18.3 \times \cos 22^{\circ}$	M1	or $18.3 \times \sin 68^{\circ}$
	16.96 to 17	A1	M2 may be assumed from 16.9
15(b)	Tan Z = $\frac{10}{3}$ Use of tangent	M1	
	$Tan Z = \frac{10}{3}$	M1	
	73 to 73.3	A1	