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ASSESSMENT and QUALIFICATIONS ALLIANCE

General Certificate of Secondary Education

Mathematics 3302
Specification B

Module 5 Paper 1 Tier I 33005I1

Mark Scheme

2006 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.

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.

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1	4 and 96 9 and 91 16 and 84 25 and 75 36 and 64 49 and 51 64 and 36 81 and 19 100 and 0	B3	B2 for first pair B1 for second pair If neither pair contains a square number but both pairs have a total of 100 then award B1 If neither total is equal to 100 then award B1 for use of a different square number in both parts

2	£1 and 50p	B2	In any order B1 for correct time periods ie 0-1 and 1-2 or for 2 consecutive prices (50p, £1, £1.50, £2) or for 2 times with a 10 minute difference in different intervals eg 1h 55 and 2h 05 (1 hour/2 hours/2$\frac{1}{2}$ hours) Allow 50 minutes and 1 hour Do not allow eg 40 minutes and 50 minutes

3(a)	20 × 1.8 or 36	M1	
	68	A1	
3(b)	Sight of 70	M1	
	2	A1 ft	Accept –2

4(a)	70 × 20	M1	eg 1.4, 140 score M1 (correct digits)
	1400	A1	1.4 m, 140 cm score M1A1
4(b)	3600 ÷ 20	M1	0.18, 18 score M1 (correct digits)
	180	A1	0.18 m, 18 cm score M1A1

5	54 ÷ 6 or 9	M1	
	× 3	M1 dep	54 ÷ 2 scores M2
	27	A1	Note: if measurement and scale drawing is used then answer must be correct for final mark. Method marks could still be implied.

6(a)	270	B1	
6(b)	(0)65	B1	Allow (0)63 – (0)67 inclusive
6(c)	110 + 180	M1	oe
	290	A1	If measurement used allow 288 - 292

7(a)	$\frac{1}{2} \times 4 \times 3$	M1	oe
	6	A1	
	cm^2	B1	Units mark
7(b)	Statement 4	B1	
	Valid reason	B1 dep	Accept: eg same base, same height base = 4 and height = 3 All areas 6 Do not accept: 3 and 4 are in both All 3 cm by 4 cm 3 cm side, 4 cm bottom All same measurements Mathematically incorrect

8(a)	(1)a + 9b	B2	B1 for (1)a or 9b
8(b)	4x + 20	B1	
8(c)(i)	18p + 6q	B1	
8(c)(ii)	–4p – 6q	B1	
8(c)(iii)	14p (+ 0q)	B1 ft	ft for 2 p terms and 2 q terms (of the form ap + bq)

9	Recognition that length = 6 m, width = 5 m and height = 3 m	M1	Any order
	6 × 5 × 3	M1	Note: 6 × 5 × 3 implies M2
	90	A1	

10(a)	4n	B1	$n \times 4$ not $n4$
10(b)	4n + 1	B2 ft	oe B1 for 4n + c, $c \neq 0$ ft for their (a) + 1 (provided algebraic) × 4 + 1 scores B1

11(a)	90 – 20 or 360 – 70 or 50 + 20	M1	oe
	70 or 290	A1	Ignore orientation
11(b) (i)	Translation 4 units to the right	B1	5 points correct B1B0
	Translation 1 unit down	B1	
11(b) (ii)	$\begin{pmatrix} -4 \\ 1 \end{pmatrix}$	B1	Condone division line

12	14×14 or 14^2	M1	
	196	A1	

13(a)	$2x^3 - 8x$	B2	B1 for each term
13(b)	$y(y - 4)$	B1	
13(c)	$(x =) y - 3$	B1	

14(a)	$1 \times 6 + 3 = 3^2$	B2	–1 eeoo ignore further work eg (= 9)
	$3 \times 8 + 1 = 5^2$	B2	–1 eeoo ignore further work eg (= 25)
14(b)	$n^2 - 2n + 3n - 6$	M1	3 terms correct
		A1	4 terms correct
	$n^2 - 2n + 3n - 6 + 6 - n$	M1	
	n^2	A1	

15(a)	Length	B1	
15(b)	Area	B1	
15(c)	Length	B1	
15(d)	None	B1	

16(a)	$x + y = 70$ or $x + 2y = 96$	B1	Answers may appear in parts (a) or (b)
16(b)	$x + 2y = 96$ or $x + y = 70$	B1	
	eg $x + 2y = 96$ – $x + y = 70$ --- $(y = 26)$ or $x + 2(70 - x) = 96$ or $x + \frac{96 - x}{2} = 70$ or $96 - 2y = 70 - y$ or $70 - y + 2y = 96$	M1	Use of algebra means both equations correct Attempt to eliminate a variable from 2 linear equations (equations need not be correct) Allow one error
	$x = 44$ or $y = 26$	A1	
	$y = 26$ and $x = 44$	A1	SC2 for both correct answers only or both answers from trial and improvement

17(a)	$9 \times \frac{1}{3}$ or $\frac{x}{9} = \frac{2}{6}$	M1	oe
	3	A1	
17(b)	Sight of $\frac{15}{2}$ or $\frac{2}{15}$ or $\frac{15}{6}$ or $\frac{6}{15}$ or $\frac{3}{2}$ or $\frac{2}{3}$	M1	oe
	$\frac{15}{6} \times 9$ or $\frac{15}{2} \times 3$ or $\frac{y}{3} = \frac{15}{2}$ or $\frac{y}{9} = \frac{15}{6}$ or $\frac{15}{2} \times$ their x	M1 dep	oe
	22.5	A1 ft	oe Accept $\frac{45}{2}$