



General Certificate of Secondary Education

Mathematics 3302 *Specification B*

Module 3 Tier I 33003I

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.

MODULE 3 INTERMEDIATE TIER**33003I**

1(a)	5.999375	B1	
1(b)(i)	6	B1 ft	
1(b)(ii)	6.0	B1 ft	ft from (a)

2	$2 \times \text{£}1.70$	M1	
	$\text{£}4.15 - \text{their } \text{£}3.40$	M1	
	$2 \times \text{their } 75\text{p}$	M1 dep	Upon either of 1st or 2nd M1
	$\text{£}1.50$	A1	

3(a)	Shows a correct method for finding 17.5% of 76	M1	$\frac{17.5}{100} \times 76$ Build up method must be complete
	$(\text{£})13.3(0)$	A1	76×1.175 M2
	Total with VAT = $\text{£}89.30$	A1	ft if M1 awarded
3(b)	$(\frac{15}{40}) \times 100$	M1	oe
	37.5	A1	oe

4	$5 \div 34$ or $500 \div 34$	M1	oe May be implied by 14... or 0.14... or build up to 13, 14 or 15 cartons
	10 or $1000 \div 34$	M1	oe 29... or 0.29
	Get 14 and 29	A1	

5(a)	$400 \times 1.04 (= 416)$	M1	oe 448 as answer can imply this M1
	$(416) \times 1.04 (= 432.64)$ and $(432.64) \times 1.04 = (449.9456)$	M1	400×1.04^3 M2 49.945(6) implies M2
	Shows 449.945(6)	A1	Must see at least 3 dp (449.945 or 449.946) Not necessary to state rounding
5(b)	$449.95 - 400.00 (= 49.95)$	M1	$\frac{449.95}{400} \times 100$ or $\frac{449.95}{400} - 1$
	$(\text{their } \frac{49.95}{400}) \times 100$	M1 dep	$\frac{449.95}{400} \times 100 - 100$ or $(\frac{449.95}{400} - 1) \times 100$
	12.4875 (or 12.5, 12.48, 12.49, 12.487, 12.488)	A1	

6(a)	729	B1	
6(b)(i)	728.5	B1	
6(b)(ii)	729.5 or 729.49... or 729.4 $\dot{9}$	B1	Do not accept 729.49, 729.499 etc SC1 numbers reversed

7	Correct method to find value of one or Jack's share eg 440/8	M1	Implied by 55 (\times 5) or 165
	275	A1	

8(a)	2.2×10^7	B1	
8(b)	$(2.2 \times 10^7) \times (8.2 \times 10^4)$	B1	oe do not accept words
	$1.8(04) \times 10^{12}$	B1 ft	1.8 ¹² oe B1B0

9	Sight of 0.9 or 90%	M1	oe eg 90/100 condone 90 = 97.20
	97.20/0.9	M1 dep	oe
	(£)108	A1	

10(a)	$\frac{7-2}{8}$	M1	oe eg 0.875 – 0.25
	$\frac{5}{8}$	A1	oe
10(b)	0.82	B1	oe

11	Converting one number to other form eg 79% = 0.79	B1	or could be 0.8 = 80% or 79% of 100 = 79 and 0.8 of 100 = 80
	All 3 numbers in comparable form $\frac{3}{4} = 0.75$ with 0.8 and 0.79	B1	oe as long as in comparable form to other two
	$\frac{3}{4}$, 79%, 0.8	B1	SC1 answer only

12(a)	1 372 000	B1	
12(b)	1.372(0...)	B1	

13	Shows speed = $\frac{\text{distance}}{\text{time}}$	M1	With any attempt to substitute values
	$\frac{6}{1.5}$	M1	oe ($\frac{6}{1.3}$ gets M1M0) Scaling 2 miles in 30 minutes M2
	4	A1	

14	10% = (£11), so 5% = (£5.50) and £110 – their £5.50	M1	or fully correct build up method
	£104.50	A1	
15	Intention to add $\frac{1}{2}$ and $\frac{1}{3}$	M1	oe may be implied by $\frac{5}{6}$, $\frac{10}{12}$ etc Any diagrams must be supported by arithmetic
	Multiplies their $\frac{5}{6}$ by 7	M1	$\frac{35}{6}$ or $5\frac{5}{6}$ implies M2
	6	A1	
Alt 15	Attempts to find total for one dog	M1	May be implied by $3\frac{1}{2}$ or $2\frac{1}{3}$
	Attempts to find total for both dogs and attempting to add	M1	$\frac{35}{6}$ or $5\frac{5}{6}$ implies M2
	6	A1	
16(a)(i)	$2^4 \times 3$	B1	Either order
16(a)(ii)	$2^4 \times 3 \times 5$	B1	Any order Both correct in non index form B0B1
16(b)	$32 = 2^5$ (any form)	M1	May be seen in (c) or lists sufficient multiples of both numbers correctly (24), 48, 72, 96 and (32), 64, 96
	$2^5 \times 3$ or 96	A1	
16(c)	8	B1	SC1 for 16(b) and 16(c) reversed
17(a)	Attempts to convert to improper fraction with at least one correct	M1	$\frac{9}{4}$ or $\frac{10}{7}$
	$\frac{9}{4} (\times) \frac{10}{7}$	A1	
	$\frac{90}{28}$	A1	oe eg $3\frac{3}{14}$ or $\frac{45}{14}$
17(b)	$\frac{5}{2}$	B1	oe
18	$\frac{1}{3}$ and $\frac{5}{7}$	B1 B1	If nothing on answer line accept any indication eg ringed

19(a)	$250 \times (0.8)^2$ or $0.2 \times 250 = (50)$ $250 - (50) = (200)$ $0.2 \times (200) = (40)$ $(200) - (40) = (160)$	M1	oe
	160	A1	
19(b)	$250 \times (0.8)^3$ or $(160) \times (0.8)$ or $0.2 \times (160) = (32)$ $(160) - (32) = (128)$	M1	
	$0.2 \times (128) = (25.6)$ $(128) - (25.6) = (102.4)$	M1	M2 $250 \times (0.8)^4$
	102.4	A1	