

GCSE

Mathematics C

GCSE J516

Mark Schemes on the Units

March 2007

J516/MS/R/07M

Oxford Cambridge and RSA Examinations

OCR (Oxford, Cambridge and RSA Examinations) is a unitary awarding body, established by the University of Cambridge Local Examinations Syndicate and the RSA Examinations Board in January 1998. OCR provides a full range of GCSE, A level, GNVQ, Key Skills and other qualifications for schools and colleges in the United Kingdom, including those previously provided by MEG and OCEAC. It is also responsible for developing new syllabuses to meet national requirements and the needs of students and teachers.

This mark scheme is published as an aid to teachers and students, to indicate the requirements of the examination. It shows the basis on which marks were awarded by Examiners. It does not indicate the details of the discussions which took place at an Examiners' meeting before marking commenced.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

Mark schemes should be read in conjunction with the published question papers and the Report on the Examination.

OCR will not enter into any discussion or correspondence in connection with this mark scheme.

© OCR 2007

Any enquiries about publications should be addressed to:

OCR Publications PO Box 5050 Annesley NOTTINGHAM NG15 0DL

Telephone: 0870 870 6622 Facsimile: 0870 870 6621

E-mail: publications@ocr.org.uk

CONTENTS

General Certificate of Secondary Education GCSE Mathematics C – J516

MARK SCHEMES FOR THE UNITS

Unit	Content	Page
B242	Module Test M2	1
B243	Module Test M3	5
B244	Module Test M4	9
B245	Module Test M5	15
B246	Module Test M6	19
B247	Module Test M7	23
B248	Module Test M8	27
*	Grade Thresholds	30

Mark Scheme B242 March 2007

1		2	1 for 3 correct
'	√ ×		I IOI O COITECT
	× ×		Accept "yes" or "no"
	X V		
2 (a)	1500	1	
(b)	128	2	M1 for 4 x 32 seen or implied
(-)			or
			M1 for digits 128 seen
(c)	4437	1	
(d)	(60 to 80) ⁰ inclusive	1	
(e)	(15 to 25) (m) inclusive	1	
3 (a)	Orange or 27	1	4.5
(b)	Right 2 nd Left	2	1 for two correct responses
	Right		
(c)	Phone 4U or 30	1	
4 (a)	5	1	
(-)	$\frac{3}{12}$		
(b)	2 squares (or equivalent part	1	
(6)	squares) shaded	'	
(c)	0.75	1	
5	acute obtuse reflex right	3	All correct,
	c e a d		half for each correct, then round down,
	b		
2 ()	f		
6 (a)	105	1	
(b)	35 \$11:73(p) or 1173 p	1 2	M4 for digita "1172" or "6:45±5:27"0000
'	£11 ⁻ 72(p) or 1172 p		M1 for digits "1172" or "6:45+5:27" seen or clear attempt to add
8	2.6	3	M1 for 49.1 or 47.5 + 1.6 seen
			M1 for 51.7 – ("their 49.1")
			Or
			M1 for 517 – 475 (=42) seen or implied M1 for "their 42" – 16 seen or implied
			Or
			M1 for 51.7 – 1.6 (=50.1) seen or implied M1 for 50.1 – 47.5 seen or implied

Section A Total: 25

9	(a)	cuboid cylinder	2	Award 1 for two or three correct,
		cone sphere		
	(b)	D	1	Or equivalent indication for D
		C	1	Or equivalent indication for C
10	(a)	(£)3·10	2	M1 for sight of 0.25 or $\frac{1}{4}$ or ÷ 4
				or digits "31" or "62" seen
	(b)	75(%)	1	
11	(a) (i)	10	1	
	(ii)	"add 2"	1	"direction" + "quantity"
	, ,	"up in 2s"		ignore subsequent or extra working.
		•		
				Condone "to/too" for "two/2".
	(b) (i)	"+5" or "add five"	1	"direction" + "quantity"
				ignore subsequent or extra working.
	(ii)	always ends in 3 or 8 (isw)	1	Accept "it should be 43/48"
12	(a) (i)	3		
	(ii)	Any number or range in the	1	Allow range or number within range
		(inclusive) range		
		13·9 to 17·1		
	(b) (i)	85	1	
	(ii)	100	1	If zero scored in (i) and (ii) SC1 for
				170 ÷ 2 seen or implied eg "85"
	(c) (i)	9	1	
	(ii)	10.5	2	M1 for sight ordered list (either way):
				8 9 9 9 10 11 12 15 17 25
				condone two missing numbers
13	(a)	Comedy or C	1	9
	(b)	(4 to 6)%	1	
	(c)	Wrong/no	1	Dependent on some – not necessarily correct – working to support "wrong/no" or equivalent negative response.
		(44 – 48)% (is less than half)		S. Squitaiont hogalite response.
		or 2% - 6% (too low)	1	Need an numerical argument involving or
		,		implying percentages.
14		B: (0 ± 2 mm) from zero	1	Indicated unambiguously.
		A: (0.2 to 2) cm from zero	4	
		A. (0.2 to 2) GIII HOIII 2010	1	
		C: (8 to 9.8) cm from zero	1	
		5. (5 to 5.6) on nom 2610	'	SC1 if zero for events in correct order ie
				from left B A C
<u> </u>				ווטווו וכונ ט ת ט

Section B Total: 25

Mark Scheme B243 March 2007

1	(a)	2800	1	Cao
	(b)	3.2	1	Cao
	(c)	1.3	1	Cao
	(d)	15	2	W1 for 5 seen or 20 ÷ 4 seen or 60 ÷ 4 seen
2	(a)	Second shape indicated	1	
	(b)	E C	1	
3		210 seen	W2	or M1 for attempt at 6 × 35
		0·2(oe) × 'their 210'	M1	or W1 for 10% of 'their 210' correctly calculated
		42 isw	A1	cao or W4 for 42 as answer
		Alternative method 0·2(oe) × 6 or 0·2(oe) × 35	M1 A1	or W1 for 0.6 or 3.5 seen
		1·2 or 7 'their 1·2' × 35 or 'their 7' × 6 42	M1 A1	cao or W4 for 42 as answer
4	(a)	600 (p) or £6(·00) (£)12·5(0) or 1250 p (£)0·15 or 15p	1 1 1	
	(b)	6	2	W1 for 3 seen or 15 ÷ 5 seen or 30 ÷ 5 seen
	(c) (i)	6·1 to 6·3	1	
	(ii)	4·7 to 5	1	
5	(a)	60	2	W1 for 5 × 3 × 4 or 15 seen
	(b) (i)	2·5 or 2½	2	W1 for 5 or 10 seen or SC1 for 3 (m) as answer
	(ii)	Yes AND (patio doors) 1·5 m or (cupboard) 2·4 cm	2	W1 1·5 or 2·4 seen or W1 for yes with unquantified comparison

Section A Total: 25

6	(a)	25	1	Cao
	(b)	369	2	M1 for 144 or 225 seen
7	(a)	1500	1	Cao
	(b)	3·25(0) or 31/4	2	M1 for 0·75(0) or 0·5(00) or 2000 seen or figs 325 Or SC1 for 3·()
8	(a) (i)	1 8	1 1	
	(ii)	38	2	W1 for answer in range 36 to 40 or 11, 13, 8, 4, 1, 1 seen or sc1 for 19 as answer
	(b)	8.5	3	M1 for attempt to add (implied by 45 to 55 seen) M1 for division by 6 seen Or SC2 for 41 as answer
9	(a)	12	1	
	(b)	11	1	
	(c)	5	1	
10		70 to 100 or 0·7 to 1	1	
		cm or m	1	Accept correctly matched units only
				Or SC2 for 2½ to 3 feet or 30 to 36 inches or 1 yard
11	(a) (i)	(200 or £2(·00)	1	
	(ii)	40 or £(0)·4(0)	1	
	(b)	230 or £2·3(0)	2	M1 for 2 × 90 + 50 or 180 seen or £1·8(0) seen or figs 23
12	(a)	B, D, G	1	At least two correct shapes, but no errors
	(b)	E F, 3 or C, 1·5	1	

Section B Total: 25

Mark Scheme B244 March 2007

1		ET IS X	3		all letters correctly placed condone correct additional items
				W2	one error/omission
				W1	3 letters correctly placed
2	(a)	11, 8	2	W1	each number, only; either way round
				<i>or</i> M1	pair with product of 88 seen
	(b)	1/4, 3/4	2	W1	each fraction, only; either way round
				or M1	2 fractions with sum of 1
3	(a)	straight line 180	1		accept 'half/semi circle 180'
		angles straight line			or 'half turn 180'
	(b)	73 <u>and</u> opposite (angles) (equal)	3	W1	accept '73 <u>and</u> X angles (equal)'
		155		W1	
		full turn 360		W1	not turn 360'
		or circle 360			
		or angles (at a) point 360			
4	(a)	3, 10	1		both, only
	(b)	18	1		only
	(c)	4	1		only
5	(a)	<u>1.</u> 20	2		accept correct equivalent probabilities
		20		W1	condone 'unlikely' or equivalent and
					correct probability
					incorrect form or 20 seen
	(b)	clear explanation	1		implies the need to check all 5
					or that prize could be any of the 5
6		213	2	M1	Complete attempt at multiplication (need a carry fig to be convinced in traditional method)
				or	·
				W1	figs 213(00) or 10 65(0) seen
					or 3 correct rectangles (grid methods)
		65	3	M1 &	Complete attempt at division
				W1	figs 6 * (00) as a final answer
					or 90 or 150 seen (www)
				or W1	answer only
		65	3	& W 1	figs 6*(00) as a final answer

7	(a)	(i)	48	1	
		(ii)	× 2	1	direction and quantity
	(b)		32	1	
			Total	25	

8 (a)	P = 6h	2		acc P = h + h + h + h + h + h etc
			W1	6 <i>h</i> , <i>h</i> 6 exactly or equivalent seen (not 5h)
(b)	16.6	2	M1	2 × 5·2 + 2 × 3·1 soi
				or 10·4, 6·2 both seen or figs 166
(c)	10·5 cm²	3	M1	7 × 1·5 soi <i>or</i> figs 105
			M2 &	10.5
			B1	cm² or cm sq , sq cm or equivalent
9	0.048 0.08 0.4 0.408	2	W1	one value misplaced
	0.48			or fully reversed
	or 5, 4, 2, 1, 3 or 4, 3, 5, 2, 1			
10	A, B, F and C (29·38/29·40)	3		may be these letters, list of prices, list of titles or artists
	or A, B, F and E (29·89/29·90)			working includes final total shown,
				intermediate totals shown, estimates
	with correct working		М1	shown
	Not D (Louder than Loud, The Beards, 13·49) + Only one of C (Hits to Hum, 10·99) E (Whistling Bob Harris, 11·50) & other three		or M2 or W1 or W2	correct sum of at least 2 CDs or correct subtraction of 1 CD from £30 18-39 (ABF, no incorrect working) or 29-38/29-40 or 29-89/29-90 seen correct 4 chosen, no working
				correct 4 but unconvincing/inaccurate
11 (a)	correct vertical line drawn	1		working need not be ruled, may be dashed etc mark intention
(b)	(-9, 3)	1		
	(-7, -5) plotted	1		centre of their mark ±2mm

			Total	25		
			or swimming has higher mean			
		(ii)	longer swimming	1		ft only from their mean
			www		M1	a total divided by 7 seen
	(b)	(i)	23	3	M1 &	total 161 soi
		(iv)	2	1		
		(iii)	4	1		
					SC1	for (i) 43 <u>and</u> (ii) 107
		(ii)	114	1		If 0 scored so far,
12	(a)	(i)	46	1		
			(3, -1) or (3, 7) or (-1, -1) or (-1, 7)		W1	point or triangle shown but coordinate not stated
			(1, a) or	2		where a can take any value except 3

Mark Scheme B245 March 2007

_	(-)	20		
1	(a)	$\frac{20}{2}$ ringed and no other one		
		$\frac{20}{30}$ ringed and no other one	1	accept any indication of the correct answer
		ringed		
		, s	2	M1 for $\frac{21}{28}$ oe seen
	(b)	$\frac{3}{4}$	[3]	
_		- 7	4	
2	(a)		1	
	(b)	3	1	
	()		[2]	M4 (5 , 0 , 15 , 0 , 1 , 11
3	(a)	14 <i>a</i>	2	M1 for 5a + 2a + 5a + 2a or better
	41.			W1 for either term
	(b)	7 <i>b</i> + 3 <i>c</i>	2	
	(-)	D d II	[4]	NAME for A compart and A
4	(a)	D and H	2	W1 for 1 correct and 1 wrong or 2 correct
				and 1 wrong
	4. \			or 1 correct only
	(b)	12	1	
<u> </u>		10	[3]	
5	(a)	18	1	
	(b)	$\frac{10}{4}$ oe	2	M1 for $4x = 7 + 3$ or better
			[3]	1000
6		$\sqrt{100}$ 4 ² 5 ² 3 ³	2	W1 for three in the correct order, for
				reversed order or two correct items
				converted, eg $\sqrt{100}$ =10 and 4^2 =16
_	(-) (:)	47.00	[2]	
7	(a) (i)	17.29	1	
	(ii)	20	1	
	(b)	30 (×) 40 (=) 1200 or	2	allow either way round
		30 (×) 35 (=) 1050 or		M1 for either 29 or 37 rounded to 1 s.f.
		25 (×) 40 (=) 1000	F43	
	(-)	405	[4]	
8	(a)	135	1	
1	(b) (i)	(0)50 – (0)55	1	M4 for 0.4 . 0.0 (over)
1	(ii)	42 – 45	2	M1 for 8·4 – 8·9 (cm)
			F43	
			[4]	

9	(a) (b)	(PS) PH PE PC DS DH DE DC	2	W1 for 4 correct ones (not PS) accept decimal and percentage equivalents follow through from (a)
			[3]	
10	(a) (b)	square and rhombus only trapezium	1	
			[2]	
11		334.8	2	M1 for 6·2 × 4·5 × 12
12	(a)	YYNY	[2] 2	W1 for three correct and one wrong
	(b)		2 [4]	W1 for 6 correct squares and a maximum of 2 wrong ones Or 1 correct rotation bottom left hand or bottom right hand segment.
13		Tamsin and square first (then multiply by 5)	2 [2]	accept any correct explanation W1 for either Tamsin or a correct explanation
14	(a)	55	3	M1 for attempt at $\sum n$ (or 440) and M1(dep) for their 440 ÷ 8 soi
	(b)	home <u>mean</u> is higher	1	accept any correct statement on the mean
15	(a) (b)	5 6 7 four points correctly plotted and joined with a ruled line	[4]	allow the correct points or ft their table W1 for three points correctly plotted (ft their table)
			[3]	
16		49	5	M2 for 0.55×420 oe or 231 seen or M1 for $420 \div 100$ and M2 for $\frac{2}{3} \times 420$ Allow 0.66 for $\frac{2}{3}$ or 280 seen or M1 for $420 \div 3$
			[5]	

Mark Scheme B246 March 2007

1	(a)		Correct reflection	W1	
<u> </u>	(b)	(i)	(×)3	W1	
	(0)	(ii)	(0,1)	W1	
2	(a)	(i)	6.18	W1	
_	(a)	(ii)	1·15 i.s.w.	W2	W1 for 1·1() or 2·3
		(11)	1 10 1.3.W.	***	W1 for figs 115
	(b)		0·875 i.s.w.	W2	M1 for attempt at 7÷8 seen or 0·125
3	(a)		5 correct points plotted and no extras	W2	W1 for 3 correct points plotted
	(b)		Negative	W1	
	(c)	(i)	Line of best fit between (1,70)(11, 57.5) and (1,74)(11, 61.5)	W1	
		(ii)	61 to 65 only	W1	
4	(a)		36	W1	
	(b)		-6	W2	W1 for 4 or -10 seen
5	(a)		5.5 or $5\frac{1}{2}$ or $\frac{11}{2}$ i.s.w	W2	M1 for 2x =4+7 or better
	(b)		-3	W3	M2 for $3x = -9$ or $-3x = 9$ or
	(-)				M1 for $kx = -9$ or $3x = k$ or
					3x + 2 = -7 or
					7x = 4x - 9 or
					7x - 4x = -7 - 2
6			140	W2	M1 for $360 - (70 + 130 + 120)$ or
					W1 for 40 or 320 seen.
			(Angles in a) quadrilateral =360°	W1	
			(Angles on a) straight line = 180°	W1	

7		0.65	W2	M1 for 1 –(0·05 +0·3) or 0·35 seen
8	(a)	13.75	W1	
	(b)	39.6	W2	W1 figs 395 to 396, or 33·24 or 0·84
				seen
				SC1 for answer 25·0
9	(a)	Final answer 6x+10	W1	
	(b)	Final answer 4(2x+3)	W1	
10	(a)	Final answer $\frac{11}{20}$ o.e.	W2	M1 for $\frac{15}{20}$ or $\frac{4}{20}$
				or equivalent common denominator with at least 1 fraction correct.
				SC1 for final answer 0.55
	(b)	Final answer $\frac{15}{16}$ o.e.	W2	M1 for $\frac{3}{8} \times \frac{5}{2}$ or alternative method
				SC1 for final answer 0.9375
11	(a)	12	W1	
	(b)	1·3	W2	W1 for 2.7 seen or
4.5			1115	SC1 for answer 13
12	(a)	11: 7	W2	W1 for 11n:7n SC1 for 7:11 or 1.57:1 or 1.6:1
	(b)	29.60	W2	1.57: 1 or 1.6: 1 M1 for $\frac{24 \cdot 05}{26}$ (×32) or W1 for figs 925 seen or W1 for 5.55 or 29.6
13		136 to 137	W4	W2 for 28 to 29 seen or M1 for π x 3^2 and M1 for 15 x 11 – their π x 3^2 s.o.i
14	(a)	2 nd view indicated	W1	
	(b)	Accept any orientation	W2	W1 for five squares drawn in a line
L			l	

Mark Scheme B247 March 2007

1	(a)		4	1				
•	(~)		•					
	(b)		5 ⁴ final answer	1				
2			80°	1	or seen on diagram for x			
			angle sum of a triangle (=180) corresponding (angles)	1inde	condone F angles. Accept opposite			
			seen	p 1inde	and alternate/ Z angles			
				р	-			
3	(a)		triangle correct and ruled ±2	1	Point R is 8 cm from P and Q			
	(b)		mm	2 ft	Ft their angle P			
	(5)		arcs and bisector for P correct		W1 for correct ruled bisector ±2° with			
			±2°		no/wrong arcs			
	(0)			M1	Markara			
	(c)			IVITI	Must use compasses			
			full arc, centre P, with 4 cm	A 1	dep. on at least W1 in (b)			
			radius ±2 mm		. , ,			
			correct shading (inside arc and		After M0, SC1 for shading below their			
			below bisector) cao		ruled bisector of angle P with no arc or inside their arc with no bisector			
					or for shading between PQ, their ruled			
					bisector of angle P and their arc centre			
4	<u>(a)</u>		0.25 0.0 (0.000) 0.25(1)	2	P			
4	(a)		0.35 o.e. (accept 0.35/1)	2	M1 for 1 – (0.4 + 0.25) implied by answer 0.71			
	(b)		20	2				
					M1 for 0.25 × 80 o.e.			
5	(a)		$2^3 \times 5$ o.e.	2	M1 for 2 and 5 seen (may be in			
	(b)	(i)	120 (or 2 ³ × 3 × 5)	2	division or tree) M1 for any multiple of 120 selected as			
	(5)	(1)	120 (01 2	_	answer or a product that gives 120			
		(ii)	8 (or 2³)	1				
					After 0 in (b)(i) and (ii) SC2 for both answers reversed			
					or SC1 for 8 or 2 ³ in (b)(i) or 120 or 2 ³			
					× 3 × 5			
		(')	75		in (b)(ii)			
6	(a)	(1)	75	1				
		(ii)	5	3	M2 for $3x - 2x = 18 - 13$ or better			
					or M1 for $3x + 13 = 2x + 18$ or better			
					after M0 allow SC1 for correct f.t			
					method collecting terms after bracket slip eg $3x - 2x = 9 - 13$ dep on x term			
					and number term from bracket			
			$\frac{P-2h}{2}$ or $\frac{P}{2}-h$ o.e. final		expansion			
	(b)		${2}$ or ${2}$ - n o.e. iiiai	2				
			answer		M1 for $2b = P - 2h$ or $-2b = 2h - P$			
					or W1 for $\frac{\pm P \pm 2h}{\pm 2}$ o.e. or correct			
					answer seen			

Section A Total: 25

7	(a)	0.17, 0.51	2	M1 for 1 correct or 0.68 ÷ 4 soi or for figs 17 and 51 seen
	(b)	0.97(2)	2	M1 for 0.54 × 1800 ÷ 1000 o.e. or figs 97(2) seen
8		2, 3, 4, 5	3	 W2 for 3 correct with no more than 1 incorrect or all correct with 1 extra ans. M1 for 2 ≤ n < 5.5 seen – could be separate inequalities or W1 for 2 correct integers given with no more than 2 incorrect
9	(a)	1 and 1	1	
	(b)	at least 6 points plotted correct or ft smooth curve thro at least 5 correct pts and correct shape	P1 C1ft	to nearest square curve within 1 small square of the 5 points must be reasonable U shape
	(c)	1.6 to 1.8 and –1.6 to –1.8	1ft	ft their intersections with <i>x</i> -axis provided at least 2 intersections
10	(a)	y^8	1	
	(b)	$x^2 + 3x + (1)x + 3$ final answer	2	M1 for 3 correct terms of x^2 ,3 x ,(1) x ,3 seen
		or $x^2 + 4x + 3$		or two terms correct in $x^2,4x,3$ seen
11	(a)	360 ÷ 5 o.e.	1	or 540 (÷ 5) = 108 and 180 – 108 = 72 with no errors seen
	(b)	132	3	M1 for 540 soi and M1 indep. for P – (90+120+116+82) or P - 408 where (P > 408) seen
				or M2 for 48 seen or M1 for 360 – (90+60+64+98) or 360 – 312
12		128	4	M3 for 6400/50 or $\sum fx/50$ with correct
				mid-values allow 1 slip on mid-values/products or M2 for 6400 or at least 3 of 1040, 2400, 1760, 1200 seen or their $\sum fx$ where x is
				in the correct range. or M1 for at least 3 of 80, 120, 160, 200 s.o.i.
				After M0 , SC2 for 108 or 148 final answer
13		7.2(1)	3	M2 for $\sqrt{6^2 + 4^2}$ M1 for $6^2 \pm 4^2$ implied by 52 or 20 seen www For 3 marks accept ans 7 after M2 earned

Section B Total: 25

Mark Scheme B248 March 2007

		I	_	0:61
1	(a)	triangle with vertices at (6, 3)	3	2 if two vertices correct
		(9, 3) and (6, 9)		or
				2 for enlargement sf 1.5 using wrong
				centre
				1 for enlargement centre (0.0) but wrong of
	(b)	angle or orientation	1	1 for enlargement centre (0,0) but wrong sf
2	(a) (i)	8/15 o.e.	2	2 / 9 15
2	(a) (i)	6/13 0.e.	2	M1 for $\frac{2}{5} \times \frac{4}{3}$ or $\frac{8}{20} \div \frac{15}{20}$ o.e. with other
				common denominator
	(ii)	$8\frac{1}{4}$ or $8\frac{3}{12}$	3	W2 for 99/12 or 33/4 o.e. seen
				or
				M1 for $\frac{11}{3} \times \frac{9}{4}$ [at least one term correct]
				$\frac{1}{3}$ $\frac{1}{4}$ [at least one term correct]
				and
				M1 for multiplying numerators and
				denominators ft their attempt at conversion
	(b)	2·4 × 10 ⁻³	2	1 for other forms of 0.0024 seen or for
	` '			other forms of 2.4×10^n as final answer
3		$x^2 + 2x - 15$ as final answer	3	W2 for 2 terms correct in a 3 term
				expression
				M2 for $x^2 + 5x - 3x - 15$ [may be in grid]
				or
				M1 for 2 terms correct of $x^2 + 5x - 3x - 15$
				[may be in grid]
4		y = -2x + 5 o.e	3	M2 for gradient = -2
				or
				M1 for attempt at gradient = y difference ÷
				x difference
				and
				M1 for $y = mx + 5$
				or
<u> </u>				W2 for −2 <i>x</i> + 5
5	(a)	$\sqrt{3F}$	3	These marks can be gained in any order
		$[r=]\sqrt{\frac{\sigma}{\pi h}}$		100
		Y /////		M1 for multiplying by 3
				M4 for dividing by #h
				M1 for dividing by πh
				(But $3f \div \pi \div h$ would not score the mark)
				M1 for square root of their complete
				expression for r^2
<u> </u>	(b)	Volume and $L \times L^2 = L^3$ o.e.	1	CAPICOSION IOI I
6	(a)	390 (accept 380 to 400)	2	1 for 640 to 660 or 250 to 270 seen
	` '	valid comparisons	2	1 for each valid comparison, with at least
	(b)	valiu cumpansuns	_	one of them in context
<u> </u>				OHE OF THEM IN COMEXT

Section A Total: 25

7			_					
(b)	7	/ (a) -7						
(c) $15x - 3y = 48$ or $5x + 15y = 40$ M1 condone one error subtraction or addition as appropriate to eliminate variable M1 condone one error; must be correct operation for their equations 8 (a) 58.8 or 59 3 M2 for complete method of rearranging and substituting (condone one error in each stage) 8 (b) 5.50 3 M2 for 120×0.7^2 o.e.; or M1 for 120×0.7 o.e. or 84 9 $184(\cdot2)$ www 4 W3 for $97(\cdot2)$ www seen or M2 for $230 \times \sin 25$ or $230 \times \cos 65$ or M1 for $\sin 25 = \frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) 0.2 , 0.8 , 0.2 on branches 1 10 (a) 0.2 , 0.8 , 0.2 on branches 1 11 (a) [both pairs of] sides in ratio 1: 1.5 o.e. 1 eg sf = 1.5 or $2/3$ or 1.5 o.e. (b) 6.3 3 W2 for other versions of 6.33 or M1 for $9.5 \div 1.5$ o.e.; answer of 6.34 www (comes from								
(c) $15x - 3y = 48$ or $5x + 15y = 40$ M1 condone one error subtraction or addition as appropriate to eliminate variable M1 condone one error; must be correct operation for their equations 8 (a) 58.8 or 59 3 M2 for complete method of rearranging and substituting (condone one error in each stage) 8 (a) 58.8 or 59 3 M2 for 120×0.7^2 o.e.; or M1 for 120×0.7 o.e. or 84 (b) 5.50 3 W2 for 5.5 or $8.6.16 + 112 \times 100$ or M2 for $9.6.16 + 112 $		(b)	x > 4	2				
subtraction or addition as appropriate to eliminate variable M1 condone one error; must be correct operation for their equations or M2 for complete method of rearranging and substituting (condone one error in each stage) 8 (a) $58.8 \text{ or } 59$ 3 M2 for $120 \times 0.7^2 \text{ o.e.}$; or M1 for $120 \times 0.7^2 \text{ o.e.}$; or M2 for $120 \times 0.7 \text{ o.e.}$ or $110 \times 0.7 \times 0.$								
A1		(c)	15x - 3y = 48 or 5x + 15y = 40	M1	condone one error			
variable A1 or M2 for complete method of rearranging and substituting (condone one error in each stage) 8 (a) $58.8 \text{ or } 59$ 3 M2 for 120×0.7^2 o.e.; or M1 for 120×0.7 o.e. or 84 (b) 5.50 3 W2 for 5.50 or M2 for £6.16 ÷ 112×100) or M2 for £6.16 ÷ 112×100) or M1 for $112\% = 6.16$ or for 1.12 seen 9 $184(.2)$ www 4 W3 for $97(.2)$ www seen or M2 for $230 \times \sin 25$ or $230 \times \cos 65$ or M1 for $\sin 25 = \frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) $0.2, 0.8, 0.2$ on branches 1								
Second Process Sec				M1	operation for their equations			
M2 for complete method of rearranging and substituting (condone one error in each stage) 8 (a) $58.8 \text{ or } 59$ 3 M2 for 120×0.7^2 o.e.; or M1 for 120×0.7 o.e. or 84 (b) 5.50 3 W2 for 5.5 or M2 for $6.16 \div 112$ (× 100) or M1 for $112\% = 6.16$ or for 1.12 seen 9 $184(\cdot 2)$ www 4 W3 for $97(\cdot 2)$ www seen or M2 for $230 \times \sin 25$ or $230 \times \cos 65$ or M1 for $\sin 25 = \frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) 0.2 , 0.8 , 0.2 on branches 1 (b) 0.14 2 M1 for 0.7×0.2 or for 0.7×0.2 or for 0.7×0.2 or for $0.7 \times 0.7 \times 0.2$ or for $0.7 \times 0.7 \times 0.2$ or for $0.7 \times 0.7 \times 0.$			variable		or			
A1 and substituting (condone one error in each stage) 8 (a) $58.8 \text{ or } 59$ 3 M2 for 120×0.7^2 o.e.; or M1 for 120×0.7 o.e. or 84 (b) 5.50 3 W2 for 5.5 or M2 for £6.16 ÷ 112 (× 100) or M2 for £6.16 or for 1.12 seen 9 $184(\cdot 2)$ www 4 W3 for $97(\cdot 2)$ www seen or M2 for $230 \times \sin 25$ or $230 \times \cos 65$ or M1 for $\sin 25 = \frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) $0.2, 0.8, 0.2$ on branches 1 (b) 0.14 2 M1 for 0.7×0.2 or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1: 0.7×0.2 or $0.7 \times$								
Solution				A1				
S			x = 3.5 and $y = 1.5$		~ `			
(b) 5.50 M1 for 120 × 0.7 o.e. or 84	8	(a)		3	M2 for 120×0.7^2 o.e.;			
Solution								
or M2 for £6·16 ÷ 112 (× 100) or M1 for 112% = 6·16 or for 1·12 seen 9								
M2 for £6·16 ÷ 112 (× 100) or M1 for 112% = 6·16 or for 1·12 seen 9		(b)	5.50	3				
or M1 for 112% = 6·16 or for 1·12 seen 9								
M1 for 112% = 6·16 or for 1·12 seen					· · · ·			
9								
or M2 for 230 × sin 25 or 230 x cos 65 or M1 for sin 25 = $\frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) 0.2, 0.8, 0.2 on branches (b) 0.14 2 M1 for 0.7 × 0.2 or for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1: 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from	9		184(·2) www	4				
or M1 for sin $25 = \frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) 0.2, 0.8, 0.2 on branches (b) 0.14 2 M1 for 0.7×0.2 or for 0.7×10.2 or for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1: 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for $9.5 \div 1.5$ o.e.; answer of 6.34 www (comes from			101(2)	-	,			
M1 for sin $25 = \frac{opp}{230}$ or $\cos 65 = \frac{adj}{230}$ 10 (a) 0.2, 0.8, 0.2 on branches 1 (b) 0.14 2 M1 for 0.7×0.2 or for $0.7 \times 0.7 $					M2 for 230 × sin 25 or 230 x cos 65			
10 (a) 0.2, 0.8, 0.2 on branches (b) 0.14 2 M1 for 0.7 × 0.2 or for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1 : 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from					or			
10 (a) 0.2, 0.8, 0.2 on branches (b) 0.14 2 M1 for 0.7 × 0.2 or for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1 : 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from					M1 for sin 25 = $\frac{opp}{}$ or $\cos 65 = \frac{adj}{}$			
10 (a) 0.2, 0.8, 0.2 on branches (b) 0.14 2 M1 for 0.7 × 0.2 or for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1 : 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from					$\frac{1}{230}$ or $\frac{1}{230}$ $\frac{1}{230}$			
or for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1: 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from	10		0.2, 0.8, 0.2 on branches					
for 0.7 x their branch or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1 : 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from		(b)	0.14	2				
or for figs 14 as final answer 11 (a) [both pairs of] sides in ratio 1 : 1 eg sf = 1.5 or $2/3$ or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 3 W2 for other versions of 6.33 or M1 for $9.5 \div 1.5$ o.e.; answer of 6.34 www (comes from								
for figs 14 as final answer [both pairs of] sides in ratio 1 :								
11 (a) [both pairs of] sides in ratio 1 : 1 eg sf = 1.5 or 2/3 or 1 for PQ/QR = AB/BC = 1.2 o.e. [included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for 9.5 ÷ 1.5 o.e.; answer of 6.34 www (comes from								
[included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for $9.5 \div 1.5$ o.e.; answer of 6.34 www (comes from	11	(a)		1				
[included angle =] 70° in both triangles (b) 6.3 W2 for other versions of 6.33 or M1 for $9.5 \div 1.5$ o.e.; answer of 6.34 www (comes from			1·5 o.e.					
triangles (b) 6·3 W2 for other versions of 6·33 or M1 for 9·5 ÷ 1·5 o.e.; answer of 6·34 www (comes from					1 tor PQ/QR = AB/BC = 1·2 o.e.			
(b) 6·3 W2 for other versions of 6·33 or M1 for 9·5 ÷ 1·5 o.e.; answer of 6·34 www (comes from			, -	1				
or M1 for 9·5 ÷ 1·5 o.e.; answer of 6·34 www (comes from		(h)	Ť	2	W2 for other versions of 6.22			
M1 for 9·5 ÷ 1·5 o.e.; answer of 6·34 www (comes from		(0)	0.3	3				
answer of 6·34 www (comes from								
· · · · · · · · · · · · · · · · · · ·								
<u> </u>	L				premature approximation) implies M1			

Section B Total: 25

General Certificate of Secondary Education (Mathematics C – Graduated Assessment) (J516) March 2007 Assessment Series

Unit Threshold Marks

Unit	Unit		a*	а	b	С	d	е	f	g	р	u
D242	Raw	50							38	23	14	0
B242	UMS	42							36	24	(18)	0
D242	Raw	50							25	12		0
B243	UMS	47							36	24		0
B244	Raw	50						38	24	15		0
B244	UMS	54						48	36	(30)		0
D245	Raw	50						28	15			0
B245	UMS	59						48	36			0
B246	Raw	50					27	12				0
D240	UMS	71					60	48				0
D247	Raw	50				25	13					0
B247	UMS	83				72	60					0
D240	Raw	50			30	15						0
B248	UMS	95			84	72						0

Notes

The above table shows the raw marks and the corresponding key uniform scores for each unit (module test) available in the March 2007 series.

Raw marks falling between two raw marks in the appropriate row above are converted, by a linear map, to a uniform score between the uniform scores that correspond to the two raw marks.

The grade shown in the above table as 'p' indicates that the candidate has achieved at least the minimum raw mark necessary to access the uniform score scale for that unit but gained insufficient uniform marks to merit a grade 'g'. This avoids having to award such candidates a 'u' grade. Grade 'p' can only be awarded to candidates on B241 (M1) and B242 (M2). It is not a valid grade within GCSE Mathematics and will not be awarded to candidates when they aggregate for the full GCSE (J516).

For a description of how UMS marks are calculated see; http://www.ocr.org.uk/exam_system/understand_ums.html

Statistics are correct at the time of publication.

OCR (Oxford Cambridge and RSA Examinations) 1 Hills Road Cambridge **CB1 2EU**

OCR Customer Contact Centre

(General Qualifications)

Telephone: 01223 553998 Facsimile: 01223 552627 Email: helpdesk@ocr.org.uk

www.ocr.org.uk

For staff training purposes and as part of our quality assurance programme your call may be recorded or monitored

Oxford Cambridge and RSA Examinations is a Company Limited by Guarantee Registered in England Registered Office; 1 Hills Road, Cambridge, CB1 2EU Registered Company Number: 3484466 **OCR** is an exempt Charity

OCR (Oxford Cambridge and RSA Examinations) Head office

Telephone: 01223 552552 Facsimile: 01223 552553

