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GCSE

Mathematics C

GCSE **J516**

Mark Schemes for the Units

January 2007

J516/MS/R/07J

Oxford Cambridge and RSA Examinations

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General Certificate of Secondary Education
GCSE Mathematics C – J516

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SECTION A

1	**(a)**	$5000 < x < 5100$	**1**		*any* number in the range
	(b)	five thousand (and) one hundred fifty (-) one hundred	**1**		ignore spellings no digits
2	**(a)**	hexagon	**1**		ignore spellings
	(b)	17 to 19 or 170 mm to 190 mm	**2**	**W1** *or* **M1** *or* **W1**	2·8 to 3·2 seen their length × 6 soi 170 to 190
3	**(a)**	correct size and shape	**3**	**W1** *&* **W1**	any horizontal line: correct size & position any vertical line: correct size & (relative) position (if they have drawn a rotation, horizontal and vertical are reversed!)
	(b)	E	**1**		only
4	**(a)**	60, 70 marked	**1**		both, only
	(b)	any two even numbers	**1**		no odd numbers
	(c) (i)	67	**1**		
	(ii)	add 3	**1**		direction *and* quantity
	(d) (i)	any number pattern	**1**		any pattern of numbers except: *not* all shaded note: chessboard pattern usually scores W0 and W0 note: may have shaded out rejects & left their number pattern as unshaded
	(ii)	explanation of their pattern	**1**		must be clear explanation from which you could work out the next shaded number in *their* pattern
5	**(a)**	7	**1**		
	(b)	3	**1**		
	(c)	27	**1**		
	(d)	5	**1**		
6		5	**1**		only
		3 *or* 10 *or* ‘multiple of 10’ *or* ‘even number’	**1**		either, only
		anything other than 3, 5, 10	**1**		
7		82	**1**		
		51	**1**		
		48	**1**		
			25		

SECTION B

8 **(a)**	half shaded *or* shape split in half	**1**		roughly, by eye be convinced of intention
(b)	¾ shaded	**1**		roughly, by eye be convinced of intention
(c)	15	**1**		
9 **(a)**	6:55	**1**		any correct equivalent, condone pm eg 5 to 7, five to seven, 5 before 7 etc
(b)	68 to 68·5	**1**		range is inclusive
(c)	1·64 1 m 64 cm	**1**		
10 **(a)** **(i)**	18	**1**		
(ii)	54	**1**		*or* **ft** their (a)(i) × 3
(b)	80	**2**	**M1**	20 *or* 16 *or* 32 seen *or* 4 × 4 × 5 soi
11 **(a)**	bar drawn to 700	**1**		± 2mm
(b)	Angel, 810	**1**		
	480	**1**		
	320	**1**		*or* **ft** 800 – their 480 *or* **sc1** figs 48 (0) and 32 (0)
(c)	1116	**2**	**M1**	306 + 17 + 793 soi *or* figs 1116
12 **(a)**	5	**1**		
	25	**1**		
	10:00 (pm)	**1**		acc any correct equivalent ignore punctuation penalise 'am'
(b) **(i)**	91	**1**		
	23	**1**		
(ii)	361	**4**	**M1** **M1** **W1** *or* **W3** **sc3** *or* **sc2** *or* **sc1**	5 × 41 (figs 205) soi 3 × 52 (figs 156) soi addition of *their* quantities figs 361 (00) 383 123 *and* 260 seen 3 × 41 (figs 123) soi *or* 5 × 52 (figs 260) soi
		25		

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SECTION A

1		42×3 or 63×2 or 3×42 or 2×63	**2**	**W1** for one correct factor in a multiplication eg 2, 3, 6, 42 or 63
2	**(a)**	$\frac{1}{2}$ or equivalent	**1**	it must be a fraction
	(b)	18(.00)	**1**	
3		9 November Brookley 26 October	**1** **1** **1**	
4	**(a)** **(i)**	23 31 57 67 78 82	**2**	**W1** for four in the correct order or for the 'ends' correct
	(ii)	23 and 67	**1**	or 67 and 23
	(b) **(i)**	54	**1**	
	(ii)	29	**1**	
5	**(a)**	6 - 10	**1**	
	(b) **(i)**	B	**1**	
	(ii)	C	**1**	
6	**(a)**	222	**2**	**M1** for a correct structure with arithmetic errors
	(b)	2·6(0)	**3**	**M2** attempt at three distinct successive subtractions starting with 30 **or** **M1** for an attempt to add the three together (or 27·4(0) seen) **and**
	(c)	5	**1**	**M1** for attempt at 30 – their 27·4 soi
7	**(a)**	M(onday)	**1**	
	(b)	F(riday)	**1**	
	(c)	W(ednesday)	**1**	
	(d)	5	**1**	
			25	

SECTION B

8	**(a)**	correct diagram	**1**	
	(b)	16	**1**	
	(c) **(i)**	22	**1**	
	(ii)	add 3 (twice) or add 6 (to fence 5)	**1**	any correct explanation
9	**(a)** **(i)**	0	**1**	
	(ii)	1	**1**	
	(b)	296·4(0)	**2**	**M1** for an attempt at 24·70 × 12 soi
10	**(a)**	Y Y N N	**2**	**W1** for one error
	(b)	cube cylinder pyramid	**3**	**W1** for each correct answer
11	**(a)**	W(est)	**1**	
	(b)	X in the correct place	**1**	in Broad Lane west of Lancastre Grove
12	**(a)**	correct indication of $\frac{5}{8}$	**1**	allow other symbols
	(b)	No and there are more faces than X's.	**1**	accept any correct explanation.
13	**(a)**	5000	**1**	
	(b)	400	**3**	**M1** for 3·4 + 1·2 or 4·6 **M1** for 5 – 'their' 4·6 or 5000(ft (a)) – their 4600 soi
	(c)	365	**2**	
	(d) **(i)**	35	**1**	
	(ii)	40	**1**	**M1** for attempt at 6 × 45 or 270 seen
			25	

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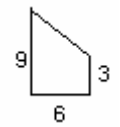
SECTION A

1	**(a)**	8·4	**1**	
	(b)	(0)·19	**1**	
	(c)	(0)·6	**1**	
	(d)	13	**2**	**M1** for 2 x 5 **or** 10 seen or implied
2	**(a)**	68	**2**	**M1** for 17 seen or implied **or** "x4" seen or implied eg attempt to count up in 4s.
	(b)	D A	**2**	**1** for each correct.
	(c)	✗ ✗ ✓ ✓	**2**	All correct **1** for 3 correct Condone yes/no **or** clear equivalent **SC1** two blanks on top of two ticks (or equivalent)
3	**(a)**	10	**2**	**M1** for 0·05 **or** $\frac{5}{100}$ **or** $\frac{1}{20}$ seen.
	(b)	30	**1**	Follow through (a) x 3
4	**(a)**	24 CaO	**1**	
	(b)	16 CaO	**1**	

5 **(a)**		3 - 4 (m)	**1**	Inclusive
(b)	**(i)**	2	**1**	
	(ii)	3·2 o.e.	**2**	**M1** for evidence of "x4" **or** digits "32"
(c)	**(i)**	33 (± 0·5 pounds)	**1**	32·5 to 33·5 inclusive
	(ii)	10 kg (or implied) because …. [For **2 marks**] "10 kg is about (21 to 23) lbs **or** "20 lb is about (9 to 9.5)kg" **or** "1 kg > 2 lbs" **or** "graph" + number(s) to support – including lines/marks drawn on the actual graph. **or** [For **1 mark**] bland "kg > lbs" o.e. **or** "10kg > 20 lbs" o.e. **or** just "from graph" with no numerical support	**2**	Lines/markings must be relevant to 10 kg or 20lbs .
(d)		5·4 – 5·8 m(etres)	**1** **1**	Award units mark only if "number" in range 4 to 8 inclusive.
			25	

SECTION B

6	**(a)**	12·96 CaO	**1**	
	(b)	24 CaO	**1**	No credit for 24^2 **or** 24 x 24
7	**(a)**	4 CaO	**1**	
	(b)	Correct enlargement 	**2**	**SC1** for correct x2 **or** x4 enlargement **1** for 2 sides correct length.
	(c)	Multiply by 3 CaO	**1**	Allow 2·8 + 2·8 + 2·8
8	**(a)** **(i)** **(ii)** **(iii)**	July/Jul 5 or 6 correct points October/Oct/ correct answer only.	**1** **2** **1**	Allow -7 **1** for 4 correct
	(b) **(i)** **(ii)**	1·64 2	**3** **1**	**M1** for 8.2 **or** 6.4 **or** 11.8 **M1** for … ÷ 5 **SC1** for digits "164" **or** for answer of 7.
9	**(a)**	10	**1**	
	(b)	11	**1**	
	(c)	4	**1**	
10	**(a)**	9·8	**2**	**M1** for 5·6 x 7 (**or** 39·2) seen **or** …… ÷ 4 seen **or** digits "98" seen.
	(b)	1·1(00)	**1**	
	(c)	48	**2**	**M1** for digits "48" **Or** either 240 **or** 12 seen **Or** either ÷ 5 **or** x4 seen
11	**(a)**	$\frac{13}{100}$ or equivalent isw	**1**	Odds not allowed eg "13:100" **or** "13 to 100" **or** "13-100" If "out of" or "in" used no credit but possibility of follow through in (b)
	(b)	$\frac{79}{100}$ or equivalent isw	**2**	**M1** for 79 seen even if odds used. Odds not allowed eg "79:100" **or** "79 to 100" **or** "79-100"
			25	

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SECTION A

1	**(a)**	1, 3, 7, 21 only, no repeats	**2**	**W1** for any 2 correct factors, none incorrect, condone repeats **or** list of at least two factor pairs
	(b)	7	**1**	Cao
2	**(a)**	[vertically] 'opposite' or 'X' or 'cross' with 'angle'	**1**	Without contradiction See list
	(b)	140 'Angles on a straight line' or 'straight line = 180'	**1** **1**	 See list
3	**(a)**	No, probabilities are not all close to 50	**1**	See list
	(b) (i)	$\frac{77}{200}$ i.s.w.	**1**	Accept answers in the range $\frac{75}{200}$ to $\frac{80}{200}$ Accept correct equivalents (fraction, decimal or percentage)
	(ii)	$\frac{71}{200}$ i.s.w.	**2**	**W1** for 71 seen or attempt to add 49 and 22 Wrong form in (i) or (ii) –1 once Common wrong denominator in (i) or (ii) –1 once
4		Any complete correct method Figs 962 or 1443 or 256 or 128 seen 15392	**M1** **W1** **A1**	 For array or grid method accept 4 correct shaded rectangles for W1 **W1** for 15392 with no working
5		36	**2**	**M1** for correct attempt to find area soi
6	**(a)**	7·4 7·25 7·02 6·58	**2**	**W1** for correct longest **or** complete reversal
	(b)	8·41	**2**	**W1** for 83·62 – 75·21 soi **or** figs 841
	(c)	7 kg	**1**	Clearly indicated
7	**(a)**	100	**1**	
	(b)	0930 1200	**1** **1**	Times in any correct form
	(c)	4005 – 4015	**2**	**W1** for 505 – 515 soi **or** 3500 + 'their 505 – 515'
			25	

SECTION B

8 (a)	Correct line drawn	**1**	intention
(b)	Correct reflection	**1**	intention
(c)	4 2	**2**	**W1** for each
9 (a) (i)	9	**1**	Cao
(ii)	17	**2**	**W1** for ordered list, using at least 8 values
(b)	Any correct explanation eg Route A, quicker on average Route B, more consistent	**1**	See list **Must f.t.** their median/range in (a)
10 (a)	45*n*	**1**	Accept 45 × *n*, *n*45, *n* × 45
(b)	150 or £1·50	**2**	**W1** for 100 seen **or** 20 × 5 + 50 seen
11 (a)	(1, ⁻2)	**1**	
(b)	C plotted at (⁻1, 2)	**1**	
(c) (i)	D plotted at (4, 2) or (⁻6, 2)	**1**	**ft** their C only
(ii)	(4, 2) or (⁻6, 2)	**1**	**ft** their D only
12	900 2 400 300 500 4	**3**	**W2** for any 4 correct or **W1** for any 2 correct
13 (a)	6 3	**2**	**W1** for each, f.t. 'their 6' halved **sc1** for 192, 384 or reversed
(b)	÷ 2 o.e.	**1**	Direction and quantity needed
14	8·45 × 0·4 (=3·38) 7·97 – 'their 3·38' (= 4·59) 'their 4·59' ÷ 7·65 0·6	**M1** **M1** **M1** **A1**	Or figs 338 Or figs 459 **W4** for 0·6 as answer without wrong working **W3** for figs 6 as answer without wrong working
		25	

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SECTION A

1 (a) (i)	23000	**W1**	
(ii)	20000	**W1**	
(b) (i)	40 or 42 x 10 or 11 400, 420, 440 or 462 **Only**	**M1** **A1**	(42x10) or (40x11) (40x10) (42 x11) Answer **must** follow from one of the above calculation **SC1** for 40 x 11·50 **SC1** for 460
(ii)	Smaller as estimate(s) smaller than actual value(s)	**W1**	Must have reason, implication of rounding down at least one term. Allow f/t from *their* figures
2 (a)	8	**W1**	
(b)	12	**W1**	
(c)	4	**W2**	**M1** for 3x=10+2, or 3x=12
3	Sometimes **or** Never Always Sometimes Always	**W3**	**W2** for 2 rows correct, no extras **W1** for 1 row correct , no extras
4 (a) (i)	113° to 117°	**W1**	
(ii)	35·2 to 36·8 km	**W2**	**M1** 8·8 to 9·2 inclusive, or *their* measurement x 4. (their measurement must be seen could be on the diagram) Accept answer on diagram
(b)	Indication of position of Newmarket 53 to 57 mm from Bury St Edmunds Bearing 268° to 272°	**W1** **W1**	
5	£7(·00) www	**W3**	**M1** for (15+20=)35 seen or 3·5 seen **M1** for complete attempt at 20% of *their* total (eg 10% = 3·5 x 2) **or** **M1** for attempt at 20% of 15 or 20 **M1** for *their* 3 + *their* 4 Dependant on first M1 **SC2** for 28 seen from subtraction
6 (a) (i)	36	**W1**	6 x 6 scores 0
(ii)	17	**W2**	**W1** for 25 or 8 seen
(b) (i)	9 cao	**W1**	
(ii)	8 cao	**W1**	
		25	

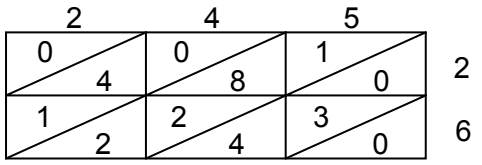
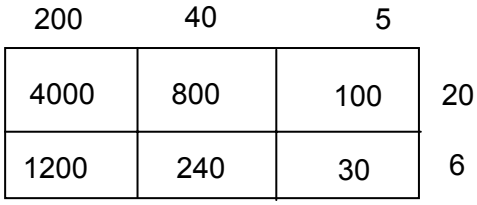
SECTION B

7	$\frac{2}{5}$ cao	**W2**	**M1** for $\frac{200}{500}$ or better **SC1** for 0·4
8 (a)	11t	**W1**	
(b)	2a + 6b	**W2**	**M1** for 1 correct term in their final answer allow b6 etc or For final answer 8ab allow **M1** if 2a or 6b seen in working
9	6 correct triangles shaded	**W2**	**M1** order 3 but not 6 shaded triangles
10	Green World by £7 www	**W4** **SC3**	**M1** for 42 + *their* 0·09 x 875 (120·75) **M1** for 0·13 x 875 (113·75) **A1** for f/t *their* 120.75 – *their* 113·75 must be correct answer for *their* figures For answer Western Energy and £7 or answer of £7 only
11 (a)	30	**W2**	**M1** for 5x3x2, 10x3 or 5x6 or 15x2
(b)	3 correct faces correctly placed and ruled within 2mm by eye without extra faces.	**W2**	**M1** for 1 correctly placed face, accurate by eye, accept not ruled condone extra faces.
12 (a) (i)	Car	**W1**	
(ii)	25 cao	**W1**	
(iii)	72 cao	**W3**	**W2** for 70 or 71 or 73 or 74 or **W1** for 70·2 to 73·8 or **W1** for 142 to 146 or 39 to 41(%) seen
(b)	64·8 km	**W2**	**M1** for 27 x 2·4 or figs 648
13 (a)	-3, (1) 5	**W1**	Both correct
(b)	Correct line drawn between (0,-3) and (4,5)	**W2**	**W1** for correct 3 points plotted or f/t *their* 3 points plotted from the table. and **W1** for f/t ruled straight line through the plotted points from *their* table.
		25	

Mark Scheme B246
January 2007

SECTION A

1 (a)	$\frac{5}{12}$	**2**	**M1** for $\frac{8}{12}$ and $\frac{3}{12}$
(b)	0·6 $\frac{2}{3}$ 68% $\frac{7}{10}$	**3**	**M2** for 0·66, 0·7 and 0·68 seen or 1 error in rank order or **M1** for any two correct changes After M0, **SC1** for correct reversed order
2 (a)	She has added or should be p^5	**1**	
(b)	$^-8$	**2**	**M1** for $^-18$ seen
(c)	$2(3x + 5)$	**1**	
3 (a)	Vertical axis scaled consistently AND <u>Frequency diagram</u> Bars correctly positioned with no gaps Bars correct heights OR <u>Frequency polygon</u> Heights correct and in correct order Points plotted at mid-intervals and ruled lines (by eye)	**1** **1** **1** **1** **1**	 Heights plotted within one square ie < 2mm error Points plotted within 1 square ie <2mm error
(b)	$600 < e \leq 650$	**1**	
(c)	Lower boundary > 450	**1**	
(d)	$\frac{1}{5}$	**2**	**M1** for $\frac{16}{80}$ o.e. or $\frac{4}{5}$

4	6·37 **OR** Long Multiplication **OR** Napier's method **OR** Grid Method	**3**	**W2** for 4·90 and 1·47 or **W1** for 4·90 or 1·47 **W2** for 4900 and 1470 **OR** 4·90 and 1·47 **OR** 130 and 1040 and 5200 **OR** (0)·13 and 1·04 and 5·2(0) **W1** 4900 or 1470 **OR** 4·90 or 1·47 **OR** two of 130, 1040, 5200 **OR** two of (0)·13, 1·04, 5·2(0)  **W2** for all boxes correct **W1** for one row **OR** two columns correct.  **W2** for all boxes correct **W1** for one row **OR** two columns correct.
5	0·25 or equivalent	**2**	**M1** for 0·4 + 0·35 or 1 – 0·4 or 1 – 0·35 or answer of 0·61
6 (a)	40	**3**	**M1** for 360 – their (128 + 58 + 34) **OR** 140 seen **M1** for 180 – their ADC Or <u>Exterior angle method</u> **M1** for two of 52, 122, 146 seen **M1** for 360 – their (52 + 122 + 146)
(b)	NO, *x* should be 34 if lines are parallel **or** A and B do not add to give 180°.	**1**	
		25	

SECTION B

7	**(a)**	9000	**2**	**M1** for 30 × 20 × 15 After **M0 SC1** for 900
	(b)	10, ft their (a)	**2**	**M1** for their "9000" ÷ (50 × 18)
8	**(a)**	6, 4, 0	**1**	
	(b)	Correct ruled line	**2**	**M1** their points plotted correctly within 2mm
9	**(a)**	16·14	**1**	
	(b)	0·65	**2**	**M1** for 0·64(6…) **SC1** for 0·650(00…0)
10	**(a)**	2	**3**	**M2** $5x = 10$ o.e. or answer of $\frac{10}{5}$ o.e. **M1** for correctly transposing one term, seen or implied, within an equation **After M0** **Sc1** for an expression containing one of ± 5x **and** one of ±10 only
	(b)	3½, $\frac{7}{2}$, 3·5	**3**	Bracket first: **W1** $4x - 6$ (= 8) **M1 ft** $4x = 14$ Or Division first: **W1** $2x - 3 = 4$ **M1 ft** $2x = 7$
11		105	**3**	**M2** for $\frac{91}{65} \times 75$ oe or **M1** for $\frac{91}{65}$ or 1·4 or $\frac{75}{65}$ or 1·15(…) or $\frac{65}{91}$ or 0·71(…) all seen
12	**(a)**	Angle of 45° (±2°) Rt ∠ (±2°) at B **and** BC 5·7 to 6·2 Rt ∠ (±2°) at C **and** completed Shape	**1** **1** **1**	
	(b) (i)	DC = 4·8 - 5·2cm	**1**	
	(ii)	48 ft their DC	**2**	**M1** ½(11 + their DC) × 6 oe complete method
			25	

Mark Scheme B247
January 2007

SECTION A

1	**(a)**	Answer **greater than 23.4** because you are **multiplying by greater than 1**	**W1**		Accept 1.1 instead of 'greater than 1'. Accept 'answer should be bigger' instead of '23.4'.
	(b)	Answer **greater than 54.6** because you are **dividing by less than 1**	**W1**		Accept dividing 'by a decimal' or 'by 0.4' or by a 0. number' instead of 'by less than 1'. Do not accept 'by less than 0' instead of 'by less than 1'. Accept 'the answer is greater' instead of '54.6'.
2		2.5 www (without wrong working) Accept 10/4 ,5/2 etc ISW (ignore subsequent working) once 10/4 reached.	**W3**	**M1** **and** **M1** **A1**	$4x + 2 = 12$ or $7x = 3x + 10$ $4x = 10$ Correct 2nd stage 2.5 c.a.o
3	**(a)**	3 points plotted within 1 square up to and including boundary	**W1**	**M1**	
	(b)	Positive or +ve	**W1**		
	(c)	Line of best fit from between (32,3) and (32,11) to between (65,23) and (65,28)	**M1**		Line must be drawn between 35 and 60
	(d)	Reading from their line within 1 square up to and including boundaries	**W1**		If no line drawn will score 0 in (d).
4	**(a)** **(i)** **(ii)**	x^2 and $2x$ $x^2 + 7x + 10$ CAO	**W1** **W1**		Accept XxX, XX, and 2xX, X2 or Xx2 o.e.
	(b)	$(x) = \frac{y-2}{3}$	**W2**	**M1** **OrW1** **orM1**	$y-2 = 3x$ *or* $\frac{y}{3} = x + \frac{2}{3}$ Ans. $\frac{y}{3} - 2$ or $\frac{y+2}{3}$ y-2/3 or y-2÷3
5	**(a)**	A £150 J £300	**W2**	**W1** **Or M1**	Either A or J correct 450/3
	(b)	£76	**W3**	**W2** **Or** **W1**	(5%) £4 seen (10%) £8 seen

6	**(a)**	$4x > x + 15$ ringed or indicated	**W1**		
	(b)	$x > 5$ o.e. or FT (a)	**W2**	**W1** **Or M1**	$x = 5$ $3x > 15$ or FT (a) .
7	**(a)**	108	**W2**	**M1**	540 seen or 360/5 or 72 Or 180 + 360 or 3 x 180
	(b)	72 seen as answer	**W2**	**M1**	36 seen or ft their (a) ie $\frac{180 - \text{their (a)}}{2}$
			25		

SECTION B

8		0.025	**W1**		
9	**(a)**	Perpendicular bisector drawn at midpoint (M) of BC.	**W2**	**W1**	P/B without construction or Correct arcs with 2 intersections but not joined
	(b)	Point on their perpendicular bisector 18 to 22 mm from A. This needs to be indicated as a cross or point	**W2**	**M1**	Arc of circle centre A, radius 18 to 22mm Or D marked within the triangle, including the sides of the triangle and within 18 to 22mm from A Or D marked on correct perpendicular bisector but arc at wrong length
10		£20.02 2.4m	**W2** **W2**	**M1 or** **M2**	3.85 **or** 1.3 seen Correct calculations intended for £20.02 and 2.4 using 3.85 and/or 1.3
11		56.5 to 57 www ISW	**W4**	**M3** **Or M2** **Or M1**	√3200 $40^2 + 40^2$ 40,40 seen on diagram or in working
12	**(a)**	2,-1,-1,2 seen	**W2**	**W1**	2 correct
	(b)	Points plotted ft (a) within 1 square) Smooth quadratic curve through 5 **correct** points (within 1 square).	**W1** **W1**		
	(c)	1.4(1…) and -1.4(1…) or FT their curve (± 0.1) ISW	**W2**	**M1**	One correct value
13	**(a)**	63(.1(…))	**W4**	**M1** **And** **M1** **And** **M1**	15 45, 75,105 seen–condone 1 error 25×15 + 24×45 + 92x75+ 13x105 seen or implied **(**275 + 1080 + 6900 + 1365) Their 9720 /154
	(b)	5.2 ISW	**W2**	**M1** **A1**	1.3 ÷ ¼ or 1.3 ÷ 0.25 or 1.3x4 or equivalent. 5 or 5.2
			25		

Mark Scheme B248
January 2007

SECTION A

1	**(a)**	a^7	**1**	cao final answer
	(b)	Final ans. $(x=)\dfrac{y-7}{4}$ or $(x=)\dfrac{y}{4}-\dfrac{7}{4}$ oe	**2**	M1 for $y-7=4x$ or M1 for $\dfrac{y}{4}=\dfrac{7}{4}+x$ W1 for other versions of $\dfrac{\pm y\pm 7}{\pm 4}$
	(c)	Final answer x^2+x-20 cao	**2**	W1 for 2 terms correct in final answer or W1 for 3 terms $x^2+5x-4x-20$ seen
2		Correct box plot	**3**	W1 for vertical line at 85 or 74 **and** W1 for median = 79 dep on 3 vertical lines only drawn Accept lines acc. to nearest ½ square
3	**(a)**	Correct translation by $\begin{pmatrix}4\\-3\end{pmatrix}$	**2**	W1 for any translation of 4 right **or** 3 down or for translation by $\begin{pmatrix}-4\\3\end{pmatrix}$
	(b)	Enlargement (and no other transformation)	**1**	
		(Centre) (0 , 0)	**1**	Indep
		(Scale factor) $\dfrac{1}{2}$ or 0·5	**1**	Indep
4	**(a)**	3 and 1.5	**1**	
	(b)	5 points plotted to within 1 square	**P1**	ft their table or correct if table blank
		Smooth curve through their 6 points	**C1**	Must be correct shape and within 1 square of points
	(c)	2.6 to 2.8	**1**	
5		c(a + b)	**1**	
		Two dimensional o.e.	**1dep**	eg length × length
6	**(a)**	2.7×10^{-4} cao	**1**	
	(b)	2.04×10^{5} cao	**2**	W1 for figs 204 seen **or** M1 for 170000 **and** 34000 seen
7		$5\dfrac{3}{20}$ o.e. mixed number	**3**	M2 for $\dfrac{23}{20}$ or $\dfrac{103}{20}$ o.e. or M1 for $\dfrac{15}{20}$ or $\dfrac{8}{20}$ or $\dfrac{75}{20}$ or $\dfrac{28}{20}$ seen
			25	

SECTION B

8 (a)	45 cao	**3**	M2 for $\frac{110200-76000}{76000}(\times 100)$ or for figs 145 or 45 seen without choice **or** M1 for 110200/76000 **or** W1 for 34200 seen
(b)	84 000 cao	**3**	M2 for $\frac{113400}{100+35}(\times 100)$ (implied by ans. 840) **or** W1 for 1.35 s.o.i. (by figs 84 seen)
9 (a)	(x - 5)(x – 6)	**M2**	M1 for $(x \pm 5)(x \pm 6)$
	5 and 6 www	**A1ft**	**and** A1 f.t. for solutions. Strict f.t. W1 for 5, 6 ww
(b)	Multiplication of equation (1) by 2 or Multiplication of equation (1) by 5 and equation (2) by 4	**M1**	attempt to equate 1 pair of coefficients at least 2 terms correct
	Addition or subtraction of equations	**M1**	dep. accept 2 terms correct
	x = 4 and y = – 1 www	**A1**	with no errors seen W1 for answers only
10	21.5 to 22.(0)	**3**	M2 for tan = $\frac{0.8}{2}$ **or** M1 for tan = $\frac{2}{0.8}$ or $\frac{0.8}{4}$ Answer in range 68 to 68.5 implies M1
11 (a)	590 cao 587 cao	**1** **1**	Allow values in either order
	both plotted correctly in order stated	**P1ft**	Strict follow through Condone if correct values reversed
(b)	Sales increasing o.e.	**1**	Ignore reference to sales figures
12	$y \geq 1$ o.e.	**1**	Accept $y > 1$
	$y \leq x$ o.e.	**1**	Accept $y < x$ SC1 for y=(and/or <) 1 and y=(and/or >) x
13 (a)	104° cao	**W2**	M1 for 180 – (22 + 54)
(b)	17.6 o.e. cao	**W2**	M1 for $\frac{11}{5}$ or $\frac{88}{5}$ o.e. seen
		25	

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

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	p	u
B241	Raw	50								30	15	0
	UMS	35								24	12	0
B242	Raw	50							39	24	15	0
	UMS	42							36	24	(18)	0
B243	Raw	50							25	13		0
	UMS	47							36	24		0
B244	Raw	50						35	21	13		0
	UMS	54						48	36	(30)		0
B245	Raw	50						29	15			0
	UMS	59						48	36			0
B246	Raw	50					29	15				0
	UMS	71					60	48				0
B247	Raw	50				30	16					0
	UMS	83				72	60					0
B248	Raw	50			33	16						0
	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 January 2007 session.

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.

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