OCR
RECOGNISING ACHIEVEMENT

GCSE

Mathematics C

General Certificate of Secondary Education **GCSE 1966**

Mark Schemes for the Units

January 2007

1966/MS/R/07J

Oxford Cambridge and RSA Examinations

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General Certificate of Secondary Education
GCSE Mathematics C - 1966

MARK SCHEMES FOR THE UNITS

Mark Scheme 2331
January 2007

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**		

Section A Total: 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* **sc1**	*or* **ft** 800 – their 480 figs 48 (0) and 32 (0)
(c)	1116	**2**	**M1** *or*	306 + 17 + 793 soi 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

Section B Total: 25

Mark Scheme 2332
January 2007

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** **M1** for attempt at 30 – their 27·4 soi
(c)	5	**1**	
7 (a)	24	**1**	
(b)	16	**1**	
(c)	16 25	**2**	accept 4 25 **M1** for 40 seen

Section A Total: 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 Lancaster 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**	**M1** for attempt at 6 × 45 or 270 seen
(d) (i)	35	**1**	
(ii)	40	**1**	

Section B Total: 25

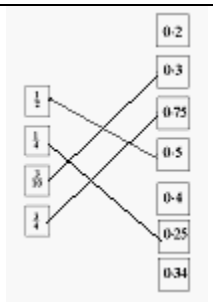
Mark Scheme 2333
January 2007

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) **(i)** **(ii)**	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)**	3 - 4 (m)	**1**	Inclusive
	(b) **(i)** **(ii)**	2 3·2 o.e.	**1** **2**	**M1** for evidence of "x4" **or** digits "32"
	(c)	1.8 to 2 (inclusive)	**1**	
	(d) **(i)** **(ii)**	33 (± 0·5 pounds) 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	**1** **2**	32·5 to 33·5 inclusive . Lines/markings must be relevant to 10 kg or 20lbs .
	(e)	5·4 – 5·8 m(etres)	**1** **1**	Award units mark only if "number" in range 4 to 8 inclusive.
	(f)	(II) 65 – 75	**1**	

Section A Total: 25

SECTION B

5			**3**	1 for each correct
6	**(a)** **(i)** **(ii)** **(iii)** **(iv)** **(v)**	(July/Jul January / Jan/Ja June and August 5 or 6 correct points October/Oct correct answer only	**1** **1** **1** **2** **1**	Allow -7 Need both **1** for 4 correct
	(b)	1·64	**3**	**M1** for 8.2 **or** 6.4 **or** 11.8 **M1** for … ÷ 5 **SC1** for digits "164" **or** for answer of 7.
7	**(a)**	10	**1**	
	(b)	11	**1**	
	(c)	4	**1**	
8		16224	**2**	**M1** for 156 x 104 seen or implied **or** digits "16224" seen.
9	**(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
10	**(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"

Section B Total: 25

Mark Scheme 2334
January 2007

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	**(a)**	$\frac{5}{8}$ o.e.	**1**	Accept fractions only
	(b)	$\frac{3}{8}$ o.e. or f.t. (a)	**2**	Accept 0·375 or f.t. (a) **W1** for attempt at 'their (a) - $\frac{1}{4}$
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
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'

Section A Total: 25

SECTION B

8	**(a)**	Correct line drawn	**1**	intention
	(b)	4 2	**2**	**W1** for each
	(c)	Correct pattern (6 triangles only shaded to give rotation order 3)	**2**	**W1** for 6 triangles shaded with order 6 **or** order 3, not 6 shaded
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)**	900 2 400 300 500 4	**3**	**W2** for any 4 correct or **W1** for any 2 correct
	(b)	24	**2**	**W1** for 1·5 × 640 ÷ 40 **or** figs 96 **or** figs 24 **or** figs 16 seen
12	**(a)** **(i)**	4	**2**	**W1** for attempt to add at least 3 lengths seen **Sc1** for 4·8
	(ii)	26 or f.t.	**2**	**W1** for 6·50 × 4 or 'their (i)'
	(b)	0·8 × 0·8 [= 0·64] (0·8 × 0·6) ÷ 2 or 0·48 ÷ 2 0·24 0·88	**M1** **M1** **A1** **A1**	Implied by figs 64 Implied by figs 24 Or their two area values (from multiplying) correctly added

Section B Total: 25

Mark Scheme 2335
January 2007

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	**(a)**		A at (0,0) (0,-1) (2,-1)	**W2**	**M1** for 90° anticlockwise with centre origin [(0,0) (0,1) (-2,1)] **or** 90° clockwise with wrong centre
	(b)		B at (-3,-1) (-2,-1)(-2,1)	**W1**	
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			(Street cars) 30 (Hasty cabs) 33	**W2** **W2**	**M1** 0·6 x 50 oe **M1** 44÷ 4 x 3 oe eg 11 x 3 NB marks for working only **NOT** decision on answer line.
6	**(a)**	**(i)**	36	**W1**	6 x 6 scores 0
		(ii)	7 or -7	**W1**	
	(b)		17	**W2**	**M1** for 25 or 8 seen

Section A Total: 25

SECTION B

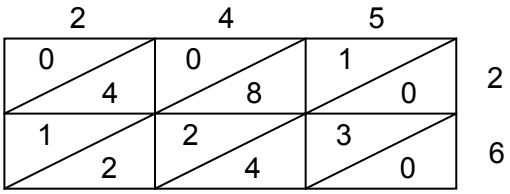
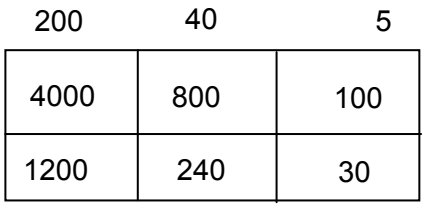
7	**(a)**	$\frac{2}{5}$ cao	**W2**	**M1** for $\frac{200}{500}$ or better **SC1** for 0·4
	(b)	3 to 3·3	**W2**	**M1** for 2·2 seen or used
8	**(a)**	11t	**W1**	
	(b)	2a + 6b	**W2**	**M1** for 1 correct term in their final answer allow b6 etc or For final answer 8ab allow **M1** if 2a or 6b seen in working
9	**(a)**	6 , 3	**W2**	**W1** each correct term
	(b)	Divide by 2 , Multiply by $\frac{1}{2}$ oe	**W1**	
10	**(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.
11	**(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
12	**(a)**	51 cao	**W1**	
	(b)	Eg Number of sticks always ends in 1 or 6. Its 101 Its 101 or 106 Its times 5 add 1	**W1**	Or other reasons It never ends in 2
13		Comparison of all 3 terms **and** choice of $\frac{2}{5}$	**W2**	Decimals, percentages or fractions 0·4. 0·33…, 0·375 40% , 33·(3…) , 37.5 or 38 $\frac{48}{120}\frac{40}{120}\frac{45}{120}$ any correct equivalent Or **W1** for Valid comparison of 2 terms as decimals, percentages or fractions **Note** $\frac{2}{5}$ alone scores zero

Section B Total: 25

Mark Scheme 2336
January 2007

SECTION A

1	**(a)**	$\frac{1}{10}$	**2**	**M1** for $\frac{3}{30}$ seen or $\frac{1}{5} \times \frac{1}{2}$
	(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)	(c) $2(3x + 5)$	**1**	
3	**(a)**	(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)	(b) $600 < e \leq 650$	**1**	
	(c)	(c) Lower boundary > 450	**1**	
	(d)	(d) 20	**2**	**M1** for $\frac{16}{80}$ (× 100), o.e. Or 100 ÷their(80÷16)

4	6·37 **OR** Long Multiplication **OR** Napier's method **OR** Grid Method	**3**	**W2** for 4·90 and 1·47 **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**	

Section A Total: 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)	(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)**	(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) **(ii)**	(b)(i) DC = 4·8 - 5·2cm (ii) 48 ft their DC	**1** **2**	**M1** ½(11 + their DC) × 6 oe complete method

Section A Total: 25

Mark Scheme 2337
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)**	3 or 3/1	**W1**		
	(ii)	(0,2)	**W1**		
	(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)**	8	**W2**	**M1**	$6 \times \frac{4}{3}$ or $\frac{24}{4} \div \frac{3}{4}$ or $\frac{24}{3}$
	(b)	1 3/20 I.S.W	**W3**	**M2** **Or** **M1**	23/20 or 1.15 15/20 or 8/20 seen or equivalent common denominators

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)**	248 Angle at centre double angle on circumference	**W1** **W1**		 Accept angle at O, or angle at origin or angle at point of circle
	(b)	56 Opposite angles of a cyclic quadrilateral add up to 180	**W1** **W1**		 Accept 'quadrilateral in a circle' in place of cyclic quadrilateral

Section A Total: 25

SECTION B

8	4.76	**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) within1 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

Section B Total: 25

Mark Scheme 2338
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**	Indep
		(Centre) (0 , 0)	**1**	Indep
		(Scale factor) $\dfrac{1}{2}$ or 0·5	**1**	
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		$35{\cdot}36\,\pi$ or $35.4\,\pi$	**3**	M1 for $\pi6^2$ or $\pi0.8^2$ seen and M1 for subtracting **areas** dep on πr^2 or πd^2 used for areas – allow if answer clearly implies subtraction

Section A Total: 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	**(a)**	21.5 to 22.(0)	**3**	M2 for tan = $\frac{0.8}{2}$ **or** M1 for tan = $\frac{2}{0.8}$ or $\frac{0.8}{4}$
	(b)	45·3 to 45·4	**4**	Answer in range 68 to 68.5 implies M1 M3 for 8.4 or complete correct method shown with 1 arithmetic slip **or** W2 for 1·6 seen **or** M1 for $\frac{1}{2}\times 4\times 0.8$ **or** W1 for **answers** 36.7(2) or 54
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

Section B Total: 25

Mark Scheme 2339
January 2007

SECTION A

1	**(a)**	100	**2**	**M1** for 500, 6000, 300 all seen **or** for 500 and 20 **or** (√) 10 000
	(b)	800 or 8×10^2	**2**	**M1** for 8 or -8 with wrong power of 10 **or** for $n \times 10^2$ o.e., where $1 \leq n < 10$
2	**(a)**	[d =] ½ at^2 or 0·5at^2 or $\frac{at^2}{2}$	**3**	**M1** for $t^2 = 2d/a$ then **M1** for $at^2 = 2d$ **or** $t^2/2 = d/a$
	(b)	$[x =]\frac{5+2y}{3-a}$ o.e. as final answer	**3**	**M1** for $3x - ax = 5 + 2y$ o.e. then indep **M1** for $x(3 - a)$ [= 5 + 2y] ft or division of both sides by their (3 − a) [ft sign errors]
3	**(a)**	$x^2 + y^2 = 16$ o.e.	**2**	**1** for $x^2 + y^2 = k$, $k \neq 16$ o.e. seen or for $x^2 + y^2 = r^2$ seen
	(b)	ruled line $y = 3 - 2x$ drawn (2·8 to 3·0, –2.7 to –2.8) and (–0·4 to –0·6, 3.8 to 4.0)	**1** **2**	 **1** each, or one for both x coords or both y coords if no marks in part (b), then **SC1** for **both** points ft from their incorrect ruled line, tol. 2mm square
4	**(a)**	$90 - y$ [angle between] tangent [and] radius [= 90°]	**1** **1**	 or tangent and diameter **condone omission of 90° if angle 90 – y is correct**
	(b)	$180 - 2y$ o.e.	**2**	**1** for angle OBA = y
	(c)	$90 - y$ or ft from a 2-term part (b)	**1**	accept simplified answer only
	(d)	[angle between tangent and chord =] [angle in] alternate segment	**1**	
5	**(a)**	fs = 4500 or f = 4500/s or s = 4500/f	**3**	**M1** for $f \propto \frac{1}{s}$ o.e. or $f = k/s$ o.e and **M1** for substituting correctly in a correct equation eg 150 = k/30 or [k =] 4500 soi
	(b)	225	**1**	or ft their k /20 [must be from $fs = k$ o.e.]

Section A Total: 25

SECTION B

6 (a)	$2x^2 - 3x - 5$	**3**	**M2** for 2 terms correct **or** for $2x^2 +^- 3x +^- 5$ or $2x^2 - 5x + 2x - 5$ or **M1** for the four-term expansion with one error
(b) (i)	$(x + 3)(x - 3)$	**1**	in both (i) and (ii) of (b), isw for roots found if factors seen
(ii)	$(x + 7)(x - 1)$	**2**	**1** for one or both signs wrong
(c)	6 as final answer	**1**	
7 (a)	freq densities calculated or plotted vert axis scaled using their f.d and labelled 'Frequency density' or area key given bars correct widths and heights	**1** **1** **1**	at least 4 correct (1, 1·9, 2·4, 1·0, 0·16) fully correct; mark intent eg reasonable attempt at straight lines; first bar starting between 144 and 146
(b)	24/66 o.e.[eg 4/11] or 0·3636..rounded or truncated to 2 or more dp	**1**	allow fractions, decimals or % for probs in (b) and (c) isw wrong cancelling after 24/66 seen
(c)	78 seen their (b) × (their 78)/81 104/297 o.e isw [eg 1872/5346] or 0·3466… to 0·350.. rounded to 2 or more dp	**M1** **M1** **A1**	for correct ft probs. used and evidence of multiplication
(d)	0·01	**1**	accept 0·00999 or better
8	19·3125 to 3 or more sf	**2**	**M1** for 5·15 **and** 3·75

9 (a) (i)	$4^2 + 4^2$ or $8^2 + 8^2$ used eg 11·3… or 5·65 to 5·66 seen (may be on diagram) 10^2 – their 'corner to centre of base'^{2} (√)68 or (√)(67·9 to 68·0625) or 8·24… [allow 8·25 if 67·9 to 68·0625 seen]	**M1** **M1** **A1**	<u>alt method1</u> **M1** for 8 sin 45 or 8 cos 45 or 4/sin 45 or 4/cos 45 **M1dep** for finding θ from cos θ = their 'corner to centre of base'/ 10 and then using tan or sin to find ht **A1** as other methods <u>alt method2</u> **M1** for $10^2 - 4^2$ [= 'perp bisector of sloping face'^{2}] **M1 dep** for their 'perp bisector of sloping face'$^2 - 4^2$ **A1** as other methods <u>alt method3(working back)</u> **M1** for $10^2 - 8{\cdot}2^2$ then **M1A1** for complete method back to showing side = 8 cm
(ii)	174·9 to 176	**2**	**M1** for 1/3 × 64 × (8·2 to 8·3)
(b) (i)	4 or 2^2	**1**	
(ii)	400	**2**	**M1** for 'volume sf 2^3' seen

Section B Total: 25

Mark Scheme 2342
January 2007

2007 INTERMEDIATE PAPER MARK SCHEME

SECTION A

1	(a)	Correct ordered stem and leaf	W2	W1 for 21 or 22 correct or at least 21 correct in an unordered diagram
		Key	W1	
	(b)	47	W1	f.t from stem and leaf eg 46.5 if only 22 values
	(c)	$\frac{7}{23}$	W2	W1 for 7 seen f.t. from stem and leaf
			6	
2		0.25×6400	M1	Complete attempt
		1600	A1	W2 for 1600 seen
		24×250	M1	Complete attempt
		6000	A1	W2 for 6000 seen
		1200	A1	Answer only W5 for 1200 W4 for 7600
			5	
3	(a)	Rotation or turn and no other transformation	W1	Ignore translations
		90°	W1	270°
		Clockwise centre (0 , 0)	W1	Anticlockwise
	(b)	Correct translation	W2	W1 for each direction SC 1 for directions reversed
			5	
4	(a)	Attempt at $3 \div 8$	M1	
		37.5	A1	W1 for 12.5 seen or figs 375 Answer only W2
	(b)	1.25	W1	
			3	

5	(a)	$x(x-2)$ seen	W1	Accept $x \times x - 2$
	(b)	8	W1	
	(c)	4 points plotted to within 1 mm	P1	f.t. from table
		Smooth curve through their 5 points	C1	
	(d)	Use of A = 2	M1	
		2.7 to 2.8	A1	Answer only W2
			6	
6	(a)	42°	W1	
		Alternate or Z angles	W1	
	(b)	94°	W1	
		Opposite angles of a cyclic quadrilateral	W1	
		Angles on a straight line (=180°)	W1	
	(c)	No. Angle ABC $\neq$ 90°	W1	
			6	
7	(a)	$3^2 \times 5$ or $3 \times 3 \times 5$	W2	W1 for partial factorisation **or** W1 for 3, 3, 5
	(b)	15	W2	W1 for 3×5^2 or 3, 5, 5 on factor tree or $3 \times 5 \times 5$ seen or W1 for answer 3, 5 or 3 × 5
			4	
8	(a)	$5(a+2)$	W1	Condone missing final bracket
	(b)	Final answer $(x-5)(x-3)$	W2	W1 for $(x \pm 3)(x \pm 5)$ seen
			3	

9	(a) $2x = 5$	M2	M1 for $3x - x = 1 + 4$ or $2x = -3$ or $3x - x = 1 - 4$ or $4x = 5$ or $3x + x = 1 + 4$
	$2\frac{1}{2}$ or 2.5 or $\frac{5}{2}$ i.s.w.	A1	Accept embedded answers Answer only W3
	(b) Muliplication of equation(1) by 2 or	M1	At least 2 terms correct
	Multiplication of equation(1) by 3 and Multiplication of equation(2) by 2		At least 2 terms correct in each
	Correctly subtracting equations	M1	Accept 2 terms correct
	$x = -1$ $y = 4$	A1	Answer only W1
		6	
10	(a) 270000	W1	
	(b)(i) 1.5×10^2 or 150	W2	W1 for figs 15 seen
	(ii) $\frac{7}{4} \times \frac{5}{14}$ (= $\frac{35}{56}$)	M2	M1 for $\frac{7}{4}$ or $\frac{14}{5}$ or equivalents seen
	$\frac{5}{8}$	A1	Answer only W3
		6	

TOTAL 50 marks

SECTION B

11		Correct labelled pie chart	W4	Allow $\pm 1\%$ or $\pm 4°$ Accept 3 sectors correct W3 if not labelled W3 for 2 sectors correct and labelled W2 if not labelled W1 for 1 sector correct and labelled
		If no marks awarded for the pie chart allow W1 for 30%, 40%, 20% and 10% seen **or** W1 for 108°, 144°, 72° and 36° seen		
			4	
12	(a)	AB = 2.8 to 3.2 cm	W1	
		Angle ABC = 97 to 103°	W1	
		CD = 3.8 to 4.4 cm	W1	
		AD = 9.8 to 10.2 cm	W1	
	(b)	$0.75 \div \frac{15}{60}$ or 0.75 × 4	M2	M1 for Speed = distance ÷ time eg 0.75 ÷ 15 (= 0.05)
		3	A1	Answer only W3
			7	
13	(a)	Final answer $10x + 3y$	W2	W1 for each **or** W1 for $4x + 6x + 2y + y$
	(b)	$5 \times 5.9 \times 6.8$	M1	
		200.6	A1	Answer only W2
			4	
14	(a)	9.2	W2	W1 for 9.1(6.....) or 9.17
	(b)	6.4×10^7	W2	W1 for figs 64
			4	

15	(a)	$320 \times \frac{115}{100}$	M2	M1 for $320 \times \frac{15}{100}$ (= 48)
		368	A1	Answer only W3
	(b)	$420 \times \frac{n}{5+4+3}$	M1	Implied by 35 seen
		175, 140, 105	A2	A1 for 2 correct Answer only W3
			6	

16	(a)	$2x = 6 + 1$	M1	
		$3\frac{1}{2}$ or 3.5 or $\frac{7}{2}$ i.s.w.	A1	Accept embedded answers Answer only W2
	(b)	One value in the range 1< *x* < 2 correctly substituted	W1	Accept outcomes either Corrected or truncated to 1 significant figure or better
		One value in the range1.5 < *x* < 2 correctly substituted	W1	
		One value in the range 1.7 < x < 1.8 correctly substituted	W1	
		1.74	W1	
			6	

17		$\frac{\pi \times 4^2}{(2)}$	M1	
		25.1 to 25.2	A1	Answer only W2
		88 + their 25.13	M1	Dep on use of π
		Subtracting $\pi \times 1^2$ (=3.1...)	M1	Independent
		109.9 to 110.1 n.w.w.	A1	Answer only W5
			5	

18	(a)	– 4, – 1, 4	W2	W1 for 2 correct or W1 for –5, –4, –1
	(b)	$n^2 = t + 5$	M1	
		$(n =)\sqrt{t+5}$	A1	SC1 for $\frac{t+5}{2}$ or $\frac{t+5}{n}$ Answer only W2
			4	

19	Scale drawings score no marks			
	(a) $\sqrt{2.78^2 + 2.36^2}$ $(AD^2) = 2.78^2 + 2.36^2$		M2	M1 for (= 13.29.....)
	3.6 to 3.7		A1	SC2 for 4.46 to 4.47 seen SC1 for 19.93 to 19.95 seen Answer only W3
	(b) Tan = $\frac{2.36}{3.79}$ (= 0.62....) or equivalent		M2	M1 for Tan = $\frac{3.79}{2.36}$
	31.8 to 32(.0)°		A1	Answer only W3
			6	
20	(a) 0.7 or 0.6 seen		W1	
	Tree diagram completed		W1	
	(b) Their[$(1-0.3)\times(1-0.4)$]		M1	
	0.42 or $\frac{42}{100}$ or $\frac{21}{50}$ or 42%		A1	Answer only W2
			4	

TOTAL 50 marks

General Certificate of Secondary Education (Mathematics C – Graduated Assessment) (1966)
January 2007 Assessment Series

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	p	u
2331	Raw	50								30	15	0
	UMS	35								24	12	0
2332	Raw	50							38	23	15	0
	UMS	42							36	24	(18)	0
2333	Raw	50							26	13		0
	UMS	47							36	24		0
2334	Raw	50						33	19	12		0
	UMS	54						48	36	(30)		0
2335	Raw	50						31	16			0
	UMS	59						48	36			0
2336	Raw	50					29	15				0
	UMS	71					60	48				0
2337	Raw	50				29	15					0
	UMS	83				72	60					0
2338	Raw	50			30	15						0
	UMS	95			84	72						0
2339	Raw	50		26	13							0
	UMS	107		96	84							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 2331 (M1) and 2332 (M2). It is not a valid grade within GCSE Mathematics and will not be awarded to candidates when they aggregate for the full GCSE (1966).

General Certificate of Secondary Education (Mathematics C – Graduated Assessment) (1966)
January 2007 Assessment Series

Unit Threshold Marks

Unit		Maximum Mark	a*	a	b	c	d	e	f	g	u
2342	Raw	100			64	44	32	20			0
	UMS	319			280	240	200	160			0
2344	Raw	48	43	37	31	26	22	18	14	10	0
	UMS	160	144	128	112	96	80	64	48	32	0

Specification Aggregation Results

Intermediate Tier

	A*	A	B	C	D	E	F	G
Overall Threshold Marks			548	468	388	308		
Percentage in Grade			5.07	32.03	42.65	9.64		
Cumulative Percentage in Grade			5.07	37.09	79.74	89.38		

The total entry for the examination was 612

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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