Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/62**

Paper 6 (Extended) **October/November 2016**

MARK SCHEME

Maximum Mark: 40

Published

This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, which would have considered the acceptability of alternative answers.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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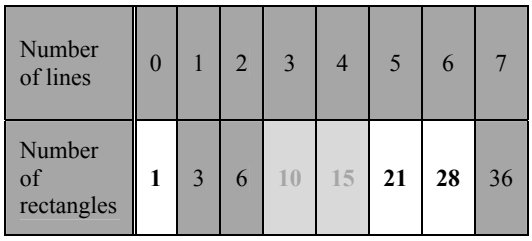
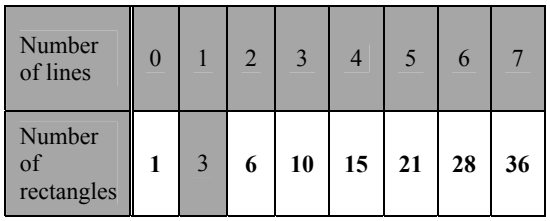
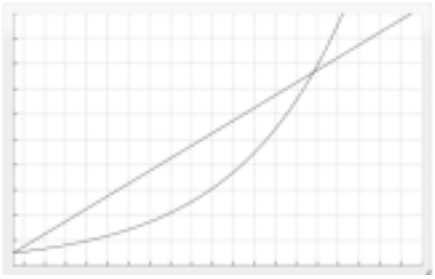
Abbreviations

awrt answers which round to
cao correct answer only
dep dependent
FT follow through after error
isw ignore subsequent working
oe or equivalent
SC Special Case
nfww not from wrong working
soi seen or implied

A INVESTIGATION RECTANGLES WITHIN RECTANGLES

Question	Answer	Mark	Part Marks
1 (a)	*PQDC* *ABDC* *CDRS*	**3**	**B1** for each
(b)	10	**1**	C opportunity
(c)	15	**1**	C opportunity
(d)		**2**	**B1** for any two of 1, 21 and 28 C opportunity
(e)	Triangle [numbers]	**1**	
(f)	66	**1**	C opportunity
2		**1**	**FT** *their* 1(d)
3 (a)	$[a =]\frac{1}{2}$, $[b =]\frac{3}{2}$, $[c =]$ 1 oe	**3**	**B1** each value C opportunity
(b)	$\frac{1}{2}(n+2)(n+1)$ Final answer	**1**	**FT** *their a, b, c* C opportunity
4 (a)	9	**1**	C opportunity
(b)	60	**1**	C opportunity
(c)	$\frac{1}{2}(n+2)(n+1) \times \frac{1}{2}(m+2)(m+1)$ oe isw	**1**	**FT** (*their* 3(b) in terms of n) × (*their* 3(b) in terms of m)

Question	Answer	Mark	Part Marks
5	$\left(\frac{1}{2}(n+2)(n+1)\right)^2$ oe seen	**1**	
	Valid working to point where 76 gives non-integer solution and 78 gives integer solution	**1**	Formula and sketch give 11 and 10.8… Trial and Improvement gives 11 and (11 and 12)
Communication: seen in three of the following questions		**1**	
1 (b)	Method of counting, 4 + 3 + 2 + 1 (implied addition), or list or drawing of 9 or 10 rectangles		
1 (c)	Method of counting, 5 + 4 + 3 + 2 + 1 (implied addition), or list or drawing of 14 or 15 rectangles		
1 (d)	Differences of 4, 5, 6, 7 shown correctly		
1 (f)	Working shown, e.g. sequence continued …, 45, 55, 66 or adding 11 + 10 + 9 + 8 + ... or substitution into formula		
3 (a)	Use of correct method (formula, difference, simultaneous equations) to find one coefficient and attempt to find another		
3 (b)	$\frac{1}{2}$(……) or $\frac{1}{2}$(……)(……)		
4 (a)	3 × 3 = 9 or 9 distinct rectangles drawn		
4 (b)	6 × 10 = 60		

B		MODELLING BIRTHDAY MONEY		
Question		**Answer**	**Mark**	**Part Marks**
1	**(a)**	30	**1**	
	(b)	$[A =] 5n + 5$ or $[A=] 10 + 5(n – 1)$ isw	**1**	
	(c)	$5 \times 20 + 5$ or $10 + 5(20 – 1)$ or $100 + 5$ or $10 + 5 \times 19$	**1**	Accept $105 = 5n + 5$ leading to 20
2	**(a)**	100	**1**	C opportunity
	(b) (i)	2.5 oe	**1**	**FT** *their* 2(a) C opportunity
	(ii)	$2.5 \times 20(20 + 3)$ or $2.5 \times 20 \times 23$ oe leading to 1150 or $10 + 15 + … + 105 = 1150$	**1**	
	(c)	39	**2**	**M1 FT** for substitution of *their k* and one correct step or sketch
3		14.64	**1**	C opportunity
4	**(a)**	10 is the first amount oe	**1**	
		1.1 is 110% or 1 + 10% or $1 + \frac{10}{100}$ or $\frac{110}{100}$	**1**	
	(b)	61.16	**1**	C opportunity
5	**(a) (i)**	Correct line	**1**	straight line with positive gradient, starting from above 0
	(ii)	Correct sketch 	**1**	Correct shaped curve starting from above 0 If 0 scored in (i) and (ii) **SC1** for both correct but starting at 0
	(b)	30	**1**	

Question	Answer	Mark	Part Marks
(c)	A, with 25 (or 24.0[4]) and 27 (or 26.7[4]) or A, with sketch showing two curves (labelled) and straight line and A crossing straight line before B	2	A may be implied by \$5 or first option etc. **B1** for A, and incomplete evidence e.g. A with 25 (or 24.0[4]) or 27 (or 26.7[4]) or A, with valid calculations for age above 25 for A and B or A and unclear diagram or missing line
6 (a)	$A = d \times 1.1^{n-1}$	1	
(b)	20	1	C opportunity
Communication: seen in two of the following questions		1	
2 (a)	$10 + 15 + 20 + 25 + 30$ (implied addition) or use of appropriate formula		
2 (b) (i)	Substitution for T **FT** and one further correct step		
3	Some working and 11, 12.1[0], 13.31, 14.64[1] or 10×1.1^4 oe		
4 (b)	Substitution e.g. 10×1.1^{19}		
6 (b)	Substitution e.g. $148 = d \times 1.1^{21}$		