CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the May/June 2015 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/62 Paper 6 (Extended), maximum raw mark 40

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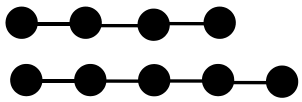
Abbreviations
cao correct answer only
dep dependent
FT follow through after error
isw ignore subsequent working
oe or equivalent
SC Special Case
nfww not from wrong working
soi seen or implied

A		**INVESTIGATION**		
1	**(a)**		**1**	
	(b)	4 3 5 4 6 5	**1**	
	(c)	[s =] m	**1**	
2	**(a)**	8 10 10 13 12 16	**1**	
	(b) (i)	[s =] $2m$ oe	**1**	
	(ii)	[r =] $3m - 2$ oe	**1**	**C** opportunity
3	**(a)**	12 17 15 22 18 27	**1**	
	(b) (i)	[s =] $3m$ oe	**1**	
	(ii)	[r =] $5m - 3$ oe	**1**	**C** opportunity

4	**(a)**	<table><tr><td>m</td><td>$m-1$</td></tr><tr><td>$2m$</td><td>$3m-2$</td></tr><tr><td>$3m$</td><td>$5m-3$</td></tr><tr><td>$4m$</td><td>$7m-4$</td></tr><tr><td>$5m$</td><td>$9m-5$</td></tr><tr><td>$6m$</td><td>$11m-6$</td></tr></table>	**2**	**B1** for row 4 **B1** for row 6 If **0** scored, **SC1** for one correct column of 6 items
	(b) **(i)**	$[s =] hm$ oe	**1**	
	(ii)	$[r =] (2h-1)m-h$ oe isw	**1**	
	(c)	$[m =] \frac{s}{h}$	**1**	
	(d)	$[r =] (2h-1)\frac{s}{h}-h$ oe isw	**1FT**	**FT** substituting *their* **4(c)** in *their* **4(b)(ii)**
5	**(a)**	$\frac{s}{h} = w$ oe	**2**	**B1** can be implied by seeing substitution of $w = \frac{s}{h}$ or $s = wh$ in *their* **4(d)**
		$r = (2h-1)w-h$		**B1**
	(b)	Yes, if $h = 17$ (only) oe	**2**	**M1** for $544 = 2h^2 - 2h$ with attempt to solve by factorisation, formula, sketch, completing the square, approximation or trial and improvement with three improving trials If **0** scored, **SC1** for 17 (without wrong working) or for Yes if 17 and –16
Communication seen in one of **2(b)(ii)**, **3(b)(ii)**, **5(b)**			**1**	

B	**MODELLING**			
1	**(a)**	8 points correctly plotted	**2**	**B1** for 6 or 7 correct
	(b) (i)	$y = x + 3$ oe	**2**	**M1** for $m = 1$ soi by, e.g. $y = x$
	(ii)	3	**1**	**C** opportunity
2	**(a)**	$0 = 0^{[2]} + 0 + c$	**1**	
	(b) (i)	$5 = 4a + 2b$ oe isw	**1**	
	(ii)	$8 = 25a + 5b$ oe isw	**1**	
	(c)	Equating coefficients soi or writing one equation correctly as $a =$ or $b =$	**M1FT**	**FT** *their* **2(b)** if coefficients not equal
		Combining *their* equations correctly to eliminate one variable or substitution of a or b	**M1FT**	
		$a = –0.3$ or $b = 3.1$ oe	**A1**	**dep** on both method marks
		their second variable correct	**B1FT**	**dep** on one method mark **FT** *their* first variable in one of *their* equations in **2(b)** If **0** scored, **SC1** for $a = –0.3$ and $b = 3.1$ or correct model without working
	(d)	Parabola through (0, 0) with local maximum seen	**1**	**C** opportunity
	(e)	Not valid oe and y decreases soi by, e.g max = 8 or Valid oe for [0 <] x < 5 or less than max or Invalid oe for $x > 5$ or Not valid oe and negative oe	**1**	**dep** on mark in **(d)**

3	**(a)**	$5 = a2^b$ $8 = a5^b$ isw	**1**	
	(b)	$\frac{8}{5} = \frac{a5^b}{a2^b}$ soi	**1**	
	(c)	$\frac{\log 1.6}{\log 2.5}$ or $\log_{2.5}1.6$	**1**	
		or $2.5^{0.513} = 1.6$		$2.5^b = 1.6$ and $b = 0.513$
		or 2.5^m = a value less than 1.6 with 2.5^n = a value more than 1.6		$0.45 \leq m < 0.5125\ldots$ with $0.5135\ldots < n \leq 0.55$.
	(d)	$y = 3.5x^{0.5}$ oe	**1**	Model must be written in full
	(e)	close fit or suitable oe	**1**	**dep** on model in **(d)**
Communication seen in one of **1(b)(ii)**, **2(d)**			**1**	