

**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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<b>Page 2</b>	<b>Mark Scheme</b>	<b>Syllabus</b>	<b>Paper</b>
	<b>Cambridge IGCSE – May/June 2015</b>	<b>0607</b>	<b>62</b>

## 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

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

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0607	62

4	(a)	$m$	$m - 1$	2	<b>B1</b> for row 4  <b>B1</b> for row 6  If <b>0</b> scored, <b>SC1</b> for one correct column of 6 items
		$2m$	$3m - 2$		
		$3m$	$5m - 3$		
		$4m$	$7m - 4$		
		$5m$	$9m - 5$		
		$6m$	$11m - 6$		
	(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 <i>their 4(c)</i> in <i>their 4(b)(ii)</i>
5	(a)	$\frac{s}{h} = w$	oe	2	<b>B1</b> can be implied by seeing substitution of $w = \frac{s}{h}$ or $s = wh$ in <i>their 4(d)</i>  <b>B1</b>
		$r = (2h - 1)w - h$			
	(b)	Yes, if $h = 17$ (only)	oe	2	<b>M1</b> 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 <b>0</b> scored, <b>SC1</b> for 17 (without wrong working) or for Yes if 17 and -16
Communication seen in one of <b>2(b)(ii)</b> , <b>3(b)(ii)</b> , <b>5(b)</b>				1	

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0607	62

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 $b =$  Combining <i>their</i> equations correctly to eliminate one variable or substitution of $a$ or $b$  $a = -0.3$ or $b = 3.1$ oe  <i>their</i> second variable correct	M1FT  M1FT	FT <i>their</i> 2(b) if coefficients not equal
	(d)	Parabola through (0, 0) with local maximum seen	1	dep on both method marks
	(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	B1FT  1  1	dep on one method mark FT <i>their</i> first variable in one of <i>their</i> equations in 2(b)  If 0 scored, SC1 for $a = -0.3$ and $b = 3.1$ or correct model without working  C opportunity  dep on mark in (d)

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2015	0607	62

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 $\log_{2.5} 1.6$ or $2.5^{0.513} = 1.6$ or $2.5^m =$ a value less than 1.6 with $2.5^n =$ a value more than 1.6	1	$2.5^b = 1.6$ and $b = 0.513$ $0.45 \leq m < 0.5125\dots$ with $0.5135\dots < n \leq 0.55$ .
	(d)	$y = 3.5x^{0.5}$ oe	1	Model must be written in full
	(e)	close fit or suitable oe	1	<b>dep</b> on model in (d)
Communication seen in one of <b>1(b)(ii)</b> , <b>2(d)</b>			1	