

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.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.

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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 border="1" style="margin: auto; border-collapse: collapse;"> <tr><td style="padding: 5px;">m</td><td style="padding: 5px;">$m - 1$</td></tr> <tr><td style="padding: 5px;">$2m$</td><td style="padding: 5px;">$3m - 2$</td></tr> <tr><td style="padding: 5px;">$3m$</td><td style="padding: 5px;">$5m - 3$</td></tr> <tr><td style="padding: 5px;">$4m$</td><td style="padding: 5px;">$7m - 4$</td></tr> <tr><td style="padding: 5px;">$5m$</td><td style="padding: 5px;">$9m - 5$</td></tr> <tr><td style="padding: 5px;">$6m$</td><td style="padding: 5px;">$11m - 6$</td></tr> </table>	m	$m - 1$	$2m$	$3m - 2$	$3m$	$5m - 3$	$4m$	$7m - 4$	$5m$	$9m - 5$	$6m$	$11m - 6$	2	<p>B1 for row 4</p> <p>B1 for row 6</p> <p>If 0 scored, SC1 for one correct column of 6 items</p>
m	$m - 1$															
$2m$	$3m - 2$															
$3m$	$5m - 3$															
$4m$	$7m - 4$															
$5m$	$9m - 5$															
$6m$	$11m - 6$															
	(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	<p>B1 can be implied by seeing substitution of $w = \frac{s}{h}$ or $s = wh$ in <i>their 4(d)</i></p>												
		$r = (2h - 1)w - h$		B1												
	(b)	Yes, if $h = 17$ (only) oe	2	<p>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</p> <p>If 0 scored, SC1 for 17 (without wrong working) or for Yes if 17 and -16</p>												
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 $b =$ 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 A1 B1FT	FT <i>their</i> 2(b) if coefficients not equal dep on both method marks 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
	(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 $\log_{2.5} 1.6$ 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	dep on model in (d)
Communication seen in one of 1(b)(ii) , 2(d)			1	