

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

**Cambridge International General Certificate of Secondary Education**

**MARK SCHEME for the May/June 2015 series**

**0607 CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/63**

Paper 6 (Extended), maximum raw mark 40

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

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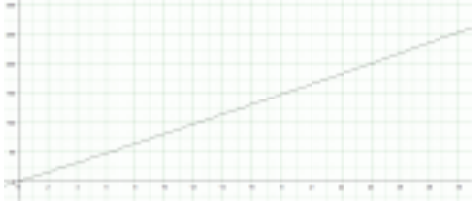
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## Abbreviations

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			
<b>1</b>	<b>(a)</b>	561 601 641	<b>2</b> <b>B1</b> for one from 561, 601 and 641 If 0 scored <b>SC1</b> for $24^2 - 3 \times 5$ , $25^2 - 4 \times 6$ , $26^2 - 5 \times 7$
	<b>(b)</b>	$[T_9 = ] 801$	<b>1</b> <b>C</b> opportunity
	<b>(c)</b>	$40n + 441$ oe	<b>2</b> <b>B1</b> for $40n + k$ or $jn + 441$ ( $j > 0$ ) or <b>B1</b> for $(n + 21)^2$ and <b>B1</b> for $-n(n + 2)$ or better
	<b>(d)</b>	55	<b>1FT</b> <b>FT</b> <i>their</i> (c) if answer is linear <b>C</b> opportunity
	<b>(e)</b>	All T-results end in 1 oe [and this ends in 3 oe] or $[n = ] 10.05$ or $843 - 441$ in not divisible by 40 oe	<b>1</b>
<b>2</b>	<b>(a)</b>	11 or eleven	<b>1</b>
	<b>(b)</b>	(top right) $n + 2$ oe (bottom) $n + 23$ oe	<b>1</b> <b>1</b>
	<b>(c)</b>	$[(n + 23)(n + 23) - n(n + 2)]$ oe] $n^2 + 46n + 529 - n^2 - 2n$	<b>2</b> <b>B1</b> for $n^2 + 46n + 529$ <b>B1</b> for $-n^2 - 2n$
<b>3</b>		$48n + 625$	<b>2</b> <b>M1</b> for $(n + 25)^2 - n(n + 2)$
<b>4</b>	<b>(a) (i)</b>	$(n + 1 + 2w)^2 - n(n + 2)$ $n^2 + n + 2w + n + 1 + 2w + 2wn$ $+ 2w + 4w^2 - n^2 - 2n$	<b>M1</b> <b>A1</b> or better Methods based on extending sequences or justifying by substitution do not score
	<b>(ii)</b>	15	<b>2</b> <b>M1</b> for attempt at solving $4w^2 + 40w + 1 = 1501$ by factorising, formula, sketch, completing the square <b>C</b> opportunity
	<b>(b)</b>	[even +] even + 1 = odd	<b>1</b> No wrong statements
Communication seen in one of <b>1(b)</b> , <b>1(d)</b> , <b>4(a)(ii)</b>			<b>1</b>

B MODELLING				
1	(a)	180	1	C opportunity
	(b) (i)	131.4[0]	1FT	FT <i>their</i> (a) $\times 0.2 \times 365 \div 100$ without wrong working C opportunity
	(ii)	$\frac{150 \times 60 \times 365 \times [0].2}{1000 \times 100} \times d$ oe	1	
	(iii)	24	1	C opportunity
2	(a)	$\tan 60 = \frac{10}{AB}$ or $\tan 30 = \frac{AB}{10}$ oe	1	$\frac{10 \sin 30}{\sin 60}$ or $\frac{1}{3} \times \frac{30}{\tan 60}$ etc.
	(b)	Anything rounding to 166	4	B1 for $\frac{30}{\tan 60}$ [=17.3..]oe B1 for [Area =] $(144 + k) \times \frac{20}{2}$ oe or one trapezium (side 144) calculated using rectangles and triangles  M1FT for <i>their</i> area $\times \frac{60}{1000}$ oe
	(c)	[DE =] $150 - \frac{30}{\tan 60}$  $\frac{BC + DE}{2} \times \frac{d \times 60}{1000}$ oe	1	
	(d)		1	[Almost] linear through (0, 0) C opportunity
	(e)	18[.1...]	1	C opportunity

<b>3</b>	<b>(a)</b>	$0.001095dw \left( 300 - \frac{(30-d)}{\tan 60} - \frac{30}{\tan 60} \right)$	<b>2</b>	Accept $\frac{0.03d \times 365 \times w}{100 \times 100} \left( 300 - \frac{(30-d)}{\tan 60} - \frac{30}{\tan 60} \right)$  or better <b>M1</b> for 2 of the operations $\frac{\times 365 \times w}{100}$
	<b>(b) (i)</b>	$0.001095dw \left( 300 - \frac{(30-d)}{\tan \theta} - \frac{30}{\tan \theta} \right)$	<b>1FT</b>	<b>FT their 3(a)</b>
	<b>(ii)</b>	Decreases oe	<b>1</b>	
	<b>(iii)</b>	No place to sit oe or Base of bath sloping oe	<b>1</b>	Not stable Not enough water
	<b>(c)</b>	Anything truncating to 155	<b>1FT</b>	<b>FT their b(i)</b> <b>C opportunity</b>
Communication seen in two of <b>1(a), 1(b)(i), 1(b)(iii), 2(d), 2(e), 3(c)</b>			<b>1</b>	