

**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

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.

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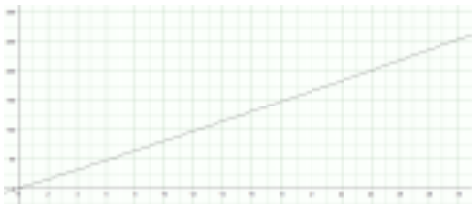
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## Abbreviations

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

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

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

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