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Cambridge International General Certificate of Secondary Education

CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/62

Paper 6 (Extended)

May/June 2016

MARK SCHEME

Maximum Mark: 40

Published

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Abbreviations

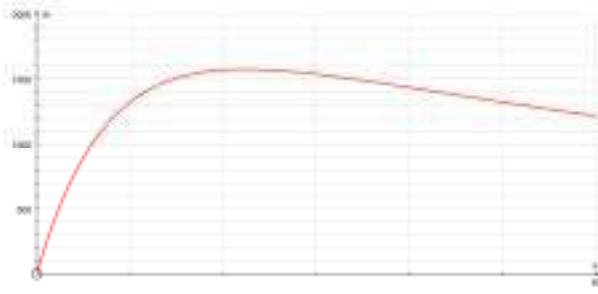
awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfw	not from wrong working
soi	seen or implied

A INVESTIGATION		SUMS OF CONSECUTIVE INTEGERS																										
Question	Answer	Marks	Part Marks																									
1	27	1	C opportunity																									
2 (a)	<table><tr><td>Sequence</td><td></td><td>Mean</td><td>Sum</td></tr><tr><td>5, 6, 7, 8, 9, 10</td><td>6</td><td>7.5</td><td>45</td></tr><tr><td>10, 11, 12, , 40</td><td>31</td><td>25</td><td>775</td></tr><tr><td>2, 3, 4, 5, 6, 7, 8</td><td>7</td><td>5</td><td>35</td></tr><tr><td>9, 10, 11, 12</td><td>4</td><td>10.5</td><td>42</td></tr><tr><td>4, 5, 6, 7, 8, 9, 10 OR 24, 25</td><td>7 2</td><td>7 24.5</td><td>49</td></tr></table>	Sequence		Mean	Sum	5, 6, 7, 8, 9, 10	6	7.5	45	10, 11, 12, , 40	31	25	775	2, 3, 4, 5, 6, 7, 8	7	5	35	9, 10, 11, 12	4	10.5	42	4, 5, 6, 7, 8, 9, 10 OR 24, 25	7 2	7 24.5	49	5	B1 for each row C opportunity	
	Sequence		Mean	Sum																								
	5, 6, 7, 8, 9, 10	6	7.5	45																								
	10, 11, 12, , 40	31	25	775																								
	2, 3, 4, 5, 6, 7, 8	7	5	35																								
	9, 10, 11, 12	4	10.5	42																								
	4, 5, 6, 7, 8, 9, 10 OR 24, 25	7 2	7 24.5	49																								
(b)	add and divide by 2 oe	1																										
3 (a)	100	1																										
(b)	$\frac{2k + 99}{2}$ oe final answer	1																										
(c)	their (a) $\times$ their (b) isw	1FT	50(2k + 99) oe																									
4	number of terms = n mean = $\frac{2k + n - 1}{2}$ or [mean =] $\frac{k + k + n - 1}{2}$	2	B1 for each statement																									
5 (a)	$[2k +] n - 1$ is even and even + even = even or even / 2 is an integer	1																										
(b)	$[2k +] n - 1$ is odd and odd + even = odd or odd/2 =5	1																										

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Question	Answer	Marks	Part Marks
6 (a)	[1 and 84] 3 and 28 7 and 12 8 and 10.5 [12 and 7] [28 and 3] [84 and 1] [21 and 4] [4 and 21]	3	B1 for each pair, allowing reversed order
(b)	for any 2 correct sequences	1	27, 28, 29 9, 10, 11, 12, 13, 14, 15 7, 8, 9, 10, 11, 12, 13, 14
7	Any one of 32, 64, 128, ...	1	C opportunity
Communication seen in one of 1, 2(a), 2(b), 7		1	

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B MODELLING TRAFFIC FLOW			
Question	Answer	Marks	Part Marks
1 (a)	15	1	C opportunity
(b)	$\frac{1000x}{60 \times 60}$ oe	1	
2	$\frac{1}{125}x^2$ or $0.008x^2$ or $8 \times 10^{-3}x^2$ oe	2	M1 $20 = k 50^2$ or better
3 (a)	1000x	1	B1 for a curve with a single max turning point, above the x -axis at $x = 60$ soi C opportunity
(b)	Numerator = distance in one hour Denominator = distance between cars oe	1	
(c)	Correct shape 	2	
(d)	1570 or 1572 to 1573	1FT	
(e) (i)	22.3 to 22.4 [km/h]	1FT	
(ii)	It is a low speed oe	1	
(f) (i)	decreases oe	1	
(ii)	increases oe	1	

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Question	Answer	Marks	Part Marks
4 (a)	$\frac{1000x}{4 + 0.556x}$ oe isw	1	C opportunity
(b)	A hand-drawn or computer-generated graph on grid paper. A blue curve starts at the origin (0,0). It rises steeply at first and then gradually levels off as it approaches x = 50. The y-axis has labels at 500, 1000, 1500, and 2000. The x-axis has labels every 20 units up to 80.	1	correct shape, through (0,0) implied, and reaching $x = 50$
(c)	$1000x = 7200 + (1800 \times \textit{their } 0.556)x$ or $\frac{1000x}{1800} = \textit{their } 0.556x + 4$ (or better)	M1FT	FT $\frac{1000x}{4 + \textit{their } 0.556x}$ only
	No, and <i>their</i> correct x given	A1	C opportunity
	or		
	No, and correct working leading to “ x is negative”		If x found then must be correct.
	or		
	No, and correct working leading to an impossible equation		
5	Anything which rounds to 35 [km/h]	1FT	FT <i>their k</i> , $0.002 \leq k \leq 0.1$ and $\frac{1000x}{4 + \textit{their } 0.556x}$
Communication in three of 1(a), 3(c), 4(a) and 4(c).		2	C1 if seen in two of them.