
CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/62

Paper 6 (Extended)

May/June 2016

MARK SCHEME

Maximum Mark: 40

Published

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.

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Abbreviations

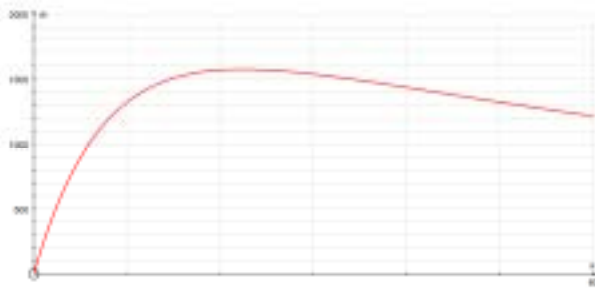
- awrt answers which round to
- cao correct answer only
- dep dependent
- FT follow through after error
- isw ignore subsequent working
- oe or equivalent
- SC Special Case
- nfwf not from wrong working
- soi seen or implied

A INVESTIGATION		SUMS OF CONSECUTIVE INTEGERS																										
Question	Answer	Marks	Part Marks																									
1	27	1	C opportunity																									
2 (a)	<table border="1"> <thead> <tr> <th>Sequence</th> <th></th> <th>Mean</th> <th>Sum</th> </tr> </thead> <tbody> <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> </tbody> </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																									
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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																										

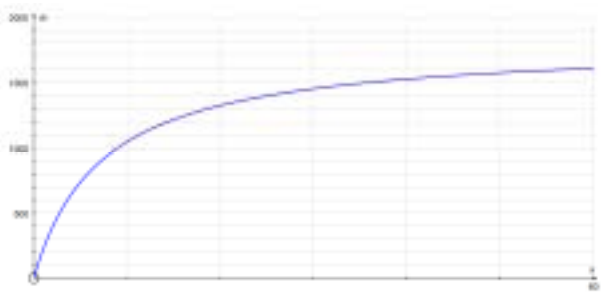
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Question	Answer	Marks	Part Marks
6 (a)	[1 and 84] 3 and 28 7 and 12 8 and 10.5 [12 and 7] [28 and 3] [84 and 1] [21 and 4] [4 and 21]	3	B1 for each pair, allowing reversed order
(b)	for any 2 correct sequences	1	27, 28, 29 9, 10, 11, 12, 13, 14, 15 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	
(b)	Numerator = distance in one hour Denominator = distance between cars oe	1	
(c)	Correct shape 	2	B1 for a curve with a single max turning point, above the x-axis at $x = 60$ soi C opportunity
(d)	1570 or 1572 to 1573	1FT	FT their k , $0.002 \leq k \leq 0.8$
(e) (i)	22.3 to 22.4 [km/h]	1FT	FT their k , $0.002 \leq k \leq 0.8$
(ii)	It is a low speed oe	1	Dependent on (e)(i) < 45
(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)		1	correct shape, through (0,0) implied, and reaching $x = 50$
(c)	$1000x = 7200 + (1800 \times \text{their } 0.556)x$ or $\frac{1000x}{1800} = \text{their } 0.556x + 4$ (or better) No, and <i>their</i> correct x given or No, and correct working leading to “ x is negative” or No, and correct working leading to an impossible equation	M1FT A1	FT $\frac{1000x}{4 + \text{their } 0.556x}$ only C opportunity If x found then must be correct.
5	Anything which rounds to 35 [km/h]	1FT	FT <i>their</i> k , $0.002 \leq k \leq 0.1$ and $\frac{1000x}{4 + \text{their } 0.556x}$
Communication in three of 1(a), 3(c), 4(a) and 4(c).		2	C1 if seen in two of them.