



Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

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.

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Page 2	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0607	62

Abbreviations

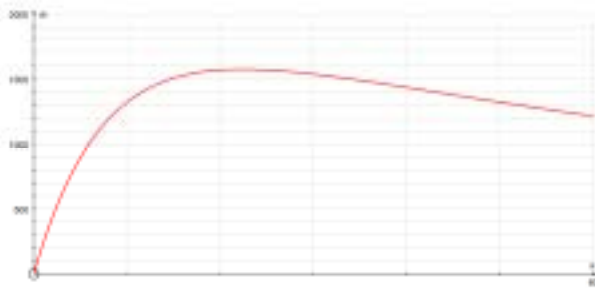
awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfwf	not from wrong working
soi	seen or implied

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																									
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																										

Page 3	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0607	62

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	

Page 4	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0607	62

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 $x = 60$ so i 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	

Page 5	Mark Scheme	Syllabus	Paper
	Cambridge IGCSE – May/June 2016	0607	62

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)	M1FT	FT $\frac{1000x}{4 + \text{their } 0.556x}$ 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</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.