



CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/52

Paper 5 (Core)

October/November 2016

MARK SCHEME

Maximum Mark: 24

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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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
- nfww not from wrong working
- soi seen or implied

Question	Answer	Marks	Part Marks																		
1	(a) <table border="1" style="margin-left: 20px;"> <tr> <td><i>PQBA</i></td> <td><i>PQDC</i></td> <td><i>PQRS</i></td> </tr> <tr> <td><i>ABDC</i></td> <td><i>ABRS</i></td> <td></td> </tr> <tr> <td><i>CDRS</i></td> <td></td> <td></td> </tr> </table>	<i>PQBA</i>	<i>PQDC</i>	<i>PQRS</i>	<i>ABDC</i>	<i>ABRS</i>		<i>CDRS</i>			2	B1 for each									
	<i>PQBA</i>	<i>PQDC</i>	<i>PQRS</i>																		
	<i>ABDC</i>	<i>ABRS</i>																			
	<i>CDRS</i>																				
	(b) <table border="1" style="margin-left: 20px;"> <tr> <td><i>PQBA</i></td> <td><i>PQDC</i></td> <td><i>PQFE</i></td> <td><i>PQRS</i></td> </tr> <tr> <td><i>ABDC</i></td> <td><i>ABFE</i></td> <td><i>ABRS</i></td> <td></td> </tr> <tr> <td><i>CDFE</i></td> <td><i>CDRS</i></td> <td></td> <td></td> </tr> <tr> <td><i>EFRS</i></td> <td></td> <td></td> <td></td> </tr> </table>	<i>PQBA</i>	<i>PQDC</i>	<i>PQFE</i>	<i>PQRS</i>	<i>ABDC</i>	<i>ABFE</i>	<i>ABRS</i>		<i>CDFE</i>	<i>CDRS</i>			<i>EFRS</i>				3	B2 for 3 or 4 correct or B1 for 2 correct		
	<i>PQBA</i>	<i>PQDC</i>	<i>PQFE</i>	<i>PQRS</i>																	
<i>ABDC</i>	<i>ABFE</i>	<i>ABRS</i>																			
<i>CDFE</i>	<i>CDRS</i>																				
<i>EFRS</i>																					
(c) 15		1	C opportunity																		
(d) <table border="1" style="margin-left: 20px;"> <tr> <td style="text-align: center;">Number of lines</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> <td style="text-align: center;">7</td> </tr> <tr> <td style="text-align: center;">Number of rectangles</td> <td style="text-align: center;">1</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> <td style="text-align: center;">10</td> <td style="text-align: center;">15</td> <td style="text-align: center;">21</td> <td style="text-align: center;">28</td> <td style="text-align: center;">36</td> </tr> </table>	Number of lines	0	1	2	3	4	5	6	7	Number of rectangles	1	3	6	10	15	21	28	36	3	B1 each cell C opportunity	
Number of lines	0	1	2	3	4	5	6	7													
Number of rectangles	1	3	6	10	15	21	28	36													
(e) Triangle [numbers]		1																			
(f) 66		1	C opportunity																		
2	(a) 6	1																			
	(b) <table border="1" style="margin-left: 20px;"> <tr> <td style="text-align: center;">Number of lines</td> <td style="text-align: center;">0</td> <td style="text-align: center;">1</td> <td style="text-align: center;">2</td> <td style="text-align: center;">3</td> <td style="text-align: center;">4</td> <td style="text-align: center;">5</td> <td style="text-align: center;">6</td> <td style="text-align: center;">7</td> </tr> <tr> <td style="text-align: center;">Number of rectangles</td> <td style="text-align: center;">1</td> <td style="text-align: center;">3</td> <td style="text-align: center;">6</td> <td style="text-align: center;">10</td> <td style="text-align: center;">15</td> <td style="text-align: center;">21</td> <td style="text-align: center;">28</td> <td style="text-align: center;">36</td> </tr> </table>	Number of lines	0	1	2	3	4	5	6	7	Number of rectangles	1	3	6	10	15	21	28	36	1	Allow one error
	Number of lines	0	1	2	3	4	5	6	7												
Number of rectangles	1	3	6	10	15	21	28	36													
(c) same		1																			
3	91 shown as answer to calculation	1																			
	91 shown as 13 th term in the sequence oe	1																			

Question	Answer	Marks	Part Marks
4 (a)	$[a=] \frac{3}{2}$ oe $[b=] 1$	3	B2 for either a or b correct If 0 scored SC2 for $\frac{n^2 + 3n + 2}{2}$ seen or M1 for one correct substitution of T and n C opportunity
(b)	Substitution of 7 in <i>their</i> formula	1	FT
(c)	20	2	M1 for $n^2 + 3n + 2 = 462$ or for sketch or for correct sequence to 15th term or further
5	496	1	FT from <i>their</i> formula in 4(a) C opportunity
Communication: Seen in one of the following questions		1	
1 (c)	Method of counting (implied addition), e.g. drawing or $5 + 4 + 3 + 2 + 1$ Or listing rectangles		
1 (d)	Differences shown		
1 (f)	Working shown, e.g. sequence continued – 45, 55, 66		
4 (a)	Working shown e.g. difference method or substitution to give two equations		
5	Working shown e.g. substitution		