UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2010 question paper

for the guidance of teachers

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/05   Paper 5 (Core), maximum raw mark 24

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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INVESTIGATION THE FIBONACCI SEQUENCE

1

Term position	...	12	13	14	15
Fibonacci number	...	144	233	**377**	**610**

2
C1

1
1ft
C1 for showing working

ft for 610 – 233 + 'their 377'

2 **(a)**

Term position	3	**6**	9	**12**
Fibonacci number	2	8	**34**	**144**

2

1 for both in row 1

1 for both in row 2

(b) **(i)**

Term position	4	8	12	**16**
Fibonacci number	3	**21**	**144**	**987**

3 is the 4$^{\text{th}}$ term...
Every 4$^{\text{th}}$ term...

5

1

2ft for all 3 in row 2 –1 eeoo

ft from Q1 for 987 – 'their 377' + 'their 610'

(ii)

Term position	**5**	**10**	**15**	20
Fibonacci number	5	55	**610**	6765

5 is the 5$^{\text{th}}$ term...
Every 5$^{\text{th}}$ term in the... is a multiple of 5

5

2 for all 3 in row 1 –1eeoo
1ft

1
1 for both entries

ft from Q1 for 'their 610'

(c) Every 6$^{\text{th}}$ term in the...

1

3	(a)	5 by 8 rectangle drawn, divided into: one 5 by 5 square one 3 by 3 square one 2 by 2 square and two 1 by 1 squares	2	If not all correct 1 for any 2 squares shown excluding the two 1 by 1 squares
	(b)	8 by 13 rectangle drawn, divided into: one 8 by 8 square one 5 by 5 square one 3 by 3 square one 2 by 2 square and two 1 by 1 squares	2	If not all correct 1 for any 2 squares shown
	(c) (i)			

Size of rectangle	1 by 1	1 by 2	2 by 3	3 by 5	5 by 8	8 by 13
Least number of squares	1	**2**	**3**	4	**5**	**6**

			1	1 for all 4 entries
	(ii)	8	1	
	(iii)	89 144	2	1 each
	(d)	$n - 1$	1	
				[Total: 24 + C1 = 25 scaled to 24]