Cambridge IGCSE

Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/63**

Paper 6 (Extended) **October/November 2016**

MARK SCHEME

Maximum Mark: 40

Published

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Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

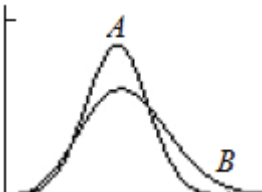Cambridge will not enter into discussions about these mark schemes.

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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
nfww	not from wrong working
soi	seen or implied

A		INVESTIGATION	TRIANGULAR GRIDS		
Question		**Answer**		**Marks**	**Part Marks**
1	**(a)**	10		1	
	(b)	36		1	
	(c)	$[A =] 2rs$ oe		1	
	(d)	16		1	
	(e)	$[A=] x^2$		1	
	(f)	Diagram (+ area stated)+ reference to $A = x^2$		1	

| **2** | **(a)** | | | **2** | **B1** for 5 or 6 cells correct |

Shape	Dots inside shape (R)	Dots on perimeter (P)	Area in triangles (A)
B	0	6	**4**
C	0	**5**	**3**
D	0	**7**	5
E	**0**	**9**	**7**
F	0	4	2

	(b)	No, supported by one correct calculated substitution		**2**	**B1** for clear attempt to substitute figures from the table into Pick's rule
	(c)	$A = P - 2$ oe isw		1	
	(d)	$A = P + 2R - 2$ oe		**2**	**B1** for $A = P + 2R + k$ or $A = P + kR - 2$ $(k \neq 0)$
	(e)	R and P which satisfy *their* formula		1	Dependent on **B1** in part (d)

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Question		Answer	Marks	Part Marks
3	**(a)**	True oe and drawing of regular hexagon	**1**	
	(b)	True oe and two points plotted to show statement is true.	**1**	C opportunity
	(c)	False oe and two points plotted to show statement is false	**1**	C opportunity
	(d)	True oe Two points plotted to show statement is true.	**1** **1**	C opportunity
Communication: Seen in one of the following questions			**1**	
3	**(b)**	Co-ordinates shown		
3	**(c)**	Co-ordinates shown		
3	**(d)**	Co-ordinates shown		

B		**MODELLING** **MODELLING WAVES**		
Question		**Answer**	**Marks**	**Part Marks**
1	**(a)**	2.918 to 2.919	**1**	C opportunity
	(b) **(i)**	Relevant comparison between 5.836 to 5.84 (2H) and 5.20	**1**	
	(ii)	Mean of 6 highest waves = 3.855 to 3.86 Relevant comparison with $1.27 \times 2.92 = 3.708$ to 3.71	**2**	**B1** for each C opportunity
2	**(a)**	 Correctly shaped and labelled sketches	**2**	**B1** for each If zero scored **SC1** for correct sketch but no, or incorrect, labels
	(b)	1.8	**1**	
	(c)	1.86 to 1.862 ...	**1**	 If 0 scored in (b) **SC1** for correct answers switched between (b) and (c)
	(d)	B and two valid reasons	**2**	**B1** for B and one valid reason,

Question			Answer	Marks	Part Marks
3	**(a)**	**(i)**	$s = 3.2$	1	
		(ii)	Speed doesn't change with height	1	
	(b)	**(i)**	$s = a\sqrt{d} + c$	1	
		(ii)	$a = 2.99$ to 3.24 $c = -0.1$ to 0.11	2	**B1** for each, dependent on correct (b)(i) If zero scored **SC1** for correct substitution into *their* model twice. C opportunity
	(c)		1.75 to 2.15	4	**B1** for 170 [m] **B1** for $s = 4.25$ to 4.5 or **B1 FT** $\dfrac{their\,170}{their\,40}$ equated **M1** for substituting *their a, c,* and *s* into *their* model
Communication: Seen in two of the following questions				1	
1	**(a)**		$\dfrac{1}{3} = 20$		
1	**(a)**		All numbers added and ÷ *their* 20		
1	**(a)**		*their* 58.37 ÷ *their* 20		
1	**(b)**	**(ii)**	10% of 60 = 6		
3	**(c)**		*their* m converted to cm e.g. 17cm = 170cm		
3	**(c)**		$\dfrac{their\,170}{their\,40}$		