



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/63**

Paper 6 (Extended)

**October/November 2016**

MARK SCHEME

Maximum Mark: 40

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**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.

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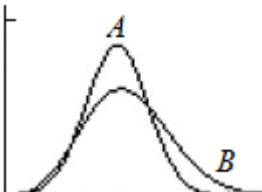
## Abbreviations

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)	Shape	Dots inside shape (R)	Dots on perimeter (P)	Area in triangles (A)	2	B1 for 5 or 6 cells correct
		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 <i>their</i> 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
<b>Communication:</b> 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	<b>B1</b> for each C opportunity
2 (a)	 <p>Correctly shaped and labelled sketches</p>	2	<b>B1</b> for each  If zero scored <b>SC1</b> for correct sketch but no, or incorrect, labels
(b)	1.8	1	
(c)	1.86 to 1.862 ...	1	If 0 scored in (b) <b>SC1</b> for correct answers switched between (b) and (c)
(d)	B and two valid reasons	2	<b>B1</b> for B and one valid reason,

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Question	Answer	Marks	Part Marks
3 (a) (i)	$s = 3.2$	1	<b>B1</b> for each, dependent on correct (b)(i)  If zero scored <b>SC1</b> for correct substitution into <i>their</i> model twice.  C opportunity
(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	
(c)	1.75 to 2.15	4	<b>B1</b> for 170 [m] <b>B1</b> for $s = 4.25$ to 4.5 or <b>B1 FT</b> $\frac{\text{their}170}{\text{their}40}$ equated <b>M1</b> for substituting <i>their a, c,</i> and $s$ into <i>their</i> model
<b>Communication:</b> Seen in two of the following questions		1	
1 (a)	$\frac{1}{3} = 20$		
1 (a)	All numbers added and $\div$ <i>their</i> 20		
1 (a)	<i>their</i> 58.37 $\div$ <i>their</i> 20		
1 (b) (ii)	10% of 60 = 6		
3 (c)	<i>their</i> m converted to cm e.g. 17cm = 170cm		
3 (c)	$\frac{\text{their}170}{\text{their}40}$		