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CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/61**

Paper 6 (Extended) **October/November 2017**

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.

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MARK SCHEME NOTES

The following notes are intended to aid interpretation of mark schemes in general, but individual mark schemes may include marks awarded for specific reasons outside the scope of these notes.

Types of mark

M Method marks, awarded for a valid method applied to the problem.

A Accuracy mark, awarded for a correct answer or intermediate step correctly obtained. For accuracy marks to be given, the associated Method mark must be earned or implied.

B Mark for a correct result or statement independent of Method marks.

When a part of a question has two or more 'method' steps, the M marks are in principle independent unless the scheme specifically says otherwise; and similarly where there are several B marks allocated. The notation '**dep**' is used to indicate that a particular M or B mark is dependent on an earlier mark in the scheme.

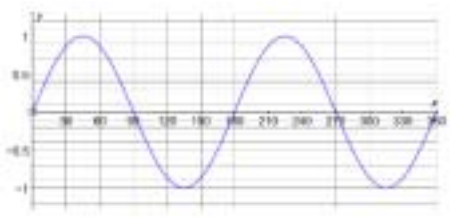
Abbreviations

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

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Question	Answer	Marks	Partial Marks
A	**INVESTIGATION EQUABLE SHAPES**		
1	$3.6 \times 4.5 = 16.2$ $2 \times (3.6 + 4.5)$ oe $= 16.2$	**2**	**B1** for each
2(a)	$10y$ isw	**1**	
2(b)	$2y + 20$ oe isw	**1**	
2(c)	2.5	**1**	**C** opportunity
3(a)	$xy = 2x + 2y$ oe	**1**	
3(b)	$xy - 2x - 2y + 4 = 4$ isw	**1**	
3(c)	3 by 6 4 by 4	**2**	**B1** for each Deduct 1 for any extras If 0 scored **B1** for 1×4 and 2×2 soi
4	$\sqrt{3^2 + 7.2^2}$ oe	**B1**	
	$7.8 + 7.8 + 6 = 21.6$ oe	**B1**	
5(a)	$A = ah$ $P = 2a + 2\sqrt{a^2 + h^2}$	**2**	**B1** for each If 0 scored **SC1** for both correct expressions
5(b)(i)	$a^2h^2 - 4a^2h + 4a^2 = 4a^2 + 4h^2$ leading to the final answer with at least one correct step.	**2**	**B1** for either side of the equation correct
5(b)(ii)	$[a^2 =] \frac{4h}{h-4}$ oe	**1**	**C** opportunity
5(b)(iii)	$h > 4$	**1**	
5(c)	27	**2**	**B1** for $[a^2 =]$ 36 or better **C** opportunities
Communication: Seen in one of the following questions.		**1**	
2(c)	$10y = 2y + 20$		
5(b)(ii)	$a^2(h - 4) = 4h$		
5(c)	Correct substitution of h shown		
5(c)	6×4.5 or 7.5 seen with $12 + 2 \times 7.5$ oe		

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Question	Answer	Marks	Partial Marks
B	**MODELLING CARBON DIOXIDE MEASUREMENTS**		
1(a)(i)		**2**	**B1** for correct maxima and minima **B1** for correct period
1(a)(ii)	180	**1**	
1(b)	60	**1**	
1(c)	9	**1**	**C** opportunity
2(a)	[period =] 12 [b =] 30	**2**	**B1** for each **C** opportunity
2(b)	4 soi	**1**	
3(a)	Correct 6 points	**2**	**B1** for 5 correct points
3(b)	$y = \frac{1}{6}x + 393$ oe	**2**	**B1** for + 393 or $\frac{1}{6}x$ **C** opportunity
4	$y = 4\sin 30x^{[o]} + \frac{1}{6}x + 393$	**1**	**FT** y = *their* functions <u>added</u> together
5	12 24 36 48 60 on the x-axis 395 400 405 on the y-axis	**1**	
6(a)	405.5	**1**	
6(b)	401.8	**1**	**FT** *their* model as above **C** opportunity
7	2019 February	**2**	**B1** for 85[**.** ……]
8	Valid comment about extrapolation	**1**	
Communication: Seen in one of the following questions.		**1**	
1(c)	360 ÷ 40 or 360 ÷ 9 = 40		
2(a)	360 ÷ 12 soi		
3(b)	numerical or graphical indication of the gradient fraction giving $\frac{1}{6}$		
6(b)	41		

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