

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

## **MARK SCHEME for the October/November 2015 series**

# **0607 CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/62**

Paper 6 (Extended), maximum raw mark 40

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**

- cao correct answer only
- dep dependent
- FT follow through after error
- isw ignore subsequent working
- oe or equivalent
- rot rounded or truncated
- SC Special Case
- nfwf not from wrong working
- soi seen or implied

<b>A INVESTIGATION</b>		<b>STARS</b>																					
Question	Answer	Mark	Part Marks																				
<b>1 (a)</b>	$360 \div 7$ oe	<b>1</b>																					
<b>(b)</b>	$[A =] \frac{360}{n}$ oe	<b>1</b>																					
<b>2 (a)</b>	102.85... to 102.9 or 103	<b>2</b>	<b>M1</b> for $\frac{720}{7}$ oe																				
<b>(b) (i)</b>	3	<b>1</b>																					
<b>(ii)</b>	3 revolutions oe <b>and</b> 7 angles oe	<b>1</b>																					
<b>(iii)</b>	$\frac{4 \times 360}{7} > 180$ oe	<b>1</b>																					
<b>3</b>	$\frac{2 \times 360}{5}$ or equivalent calculation	<b>1</b>																					
<b>4 (a)</b>	<table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <tbody> <tr> <td style="width: 15%;">3</td> <td style="width: 15%;">1</td> <td style="width: 20%;"><math>\frac{1}{3} \times 360</math></td> <td style="width: 50%;">120</td> </tr> <tr> <td>5</td> <td>2</td> <td><math>\frac{2}{5} \times 360</math></td> <td>144</td> </tr> <tr> <td>7</td> <td>3</td> <td><math>\frac{3}{7} \times 360</math></td> <td>154.3</td> </tr> <tr> <td>9</td> <td>4</td> <td><math>\frac{4}{9} \times 360</math></td> <td>160</td> </tr> <tr> <td>11</td> <td>5</td> <td><math>\frac{5}{11} \times 360</math></td> <td>163.6</td> </tr> </tbody> </table>	3	1	$\frac{1}{3} \times 360$	120	5	2	$\frac{2}{5} \times 360$	144	7	3	$\frac{3}{7} \times 360$	154.3	9	4	$\frac{4}{9} \times 360$	160	11	5	$\frac{5}{11} \times 360$	163.6	<b>2</b>	<b>B1</b> for 5 correct cells
3	1	$\frac{1}{3} \times 360$	120																				
5	2	$\frac{2}{5} \times 360$	144																				
7	3	$\frac{3}{7} \times 360$	154.3																				
9	4	$\frac{4}{9} \times 360$	160																				
11	5	$\frac{5}{11} \times 360$	163.6																				
<b>(b)</b>	$[A =] \frac{360n}{2n+1}$ oe	<b>1</b>																					

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<b>Question</b>	<b>Answer</b>	<b>Mark</b>	<b>Part Marks</b>
(c)	25	3	<b>B2</b> for $[n=]$ 12 soi or <b>M1FT</b> for <i>their</i> $\frac{360n}{2n+1} = 172.8$  <b>C</b> opportunities
<b>5</b> (a)	[1], 2, 3, 4, 5	<b>2</b>	Accept in suitable calculations e.g. $\frac{2}{11} \times 360$ Deduct 1 for extras and 1 for each omission If 0 scored <b>SC1</b> for 4 or 5 with no working
(b)	$\frac{6}{15} = \frac{2}{5}$ soi	<b>1</b>	
(c)	48, 96, 168 cao	<b>2</b>	<b>B1</b> for two correct values of $A$ only  or <b>B1</b> for three correct values plus extras less than $180^\circ$  or <b>B1</b> for 2, 4 and 7 [revolutions] soi  <b>C</b> opportunity
Communication seen in one of <b>4(c)</b> (two possible places) or <b>5(c)</b>		<b>1</b>	

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B MODELLING		BODY MASS	
Question	Answer	Mark	Part Marks
1 (a) (b) (c) (d)	80[kg]	1	C opportunity
	1.5[m] or 150cm	1	
	[M=] 100h – 100 oe seen	1	
	Straight line with positive gradient	1	
	approx through (1.5, 50) and (2, 100)	1	
2 (a)  (b) (c)	$M = kh^2$ or $M \propto h^2$ $88 = k \times (2^2 \text{ or } 4)$	1 1	If 0 scored <b>SC1</b> for $88 = 22 \times 4$ oe C opportunity  Condone 1.9[m] but not 190cm C opportunity
	$22 \times 1.5^2 [= 49.5]$ oe	1	
	1.87[m] or 187cm	1	
3 (a) (b)	1.485 to 1.49 [m] or 148.5 to 149 cm	1	Condone 3.06 as a second answer  C opportunity
	Simple (100h – 100) <b>and</b> correct conclusion	1	
4 (a)  (b)  (c)  (d)  (e)	$78 = k 1.84^n$ isw $50 = k 1.54^n$ isw	1	M1 for $78 = k \times 1.84^{2.5}$ or $50 = k \times 1.54^{2.5}$ or B1 for 16.98 to 16.99  C opportunity  C opportunity
	$\frac{78}{50} = \frac{k1.84^n}{k1.54^n}$	1	
	$\frac{\log 1.56}{\log 1.195}$ or $\log_{1.195} 1.56$	1	
	17	2	
	exponential curve	1	
5	1.67[...] or 1.68 [m]	1FT	FT <i>their</i> 17 rot to at least 2dp C opportunity
Communication seen in four of 1(d), 2(a), 2(c), 3(a), 4(d), 4(e) or 5		2	1 mark if seen in two