

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

## **MARK SCHEME for the May/June 2015 series**

# **0607 CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/33**

Paper 3 (Core), maximum raw mark 96

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

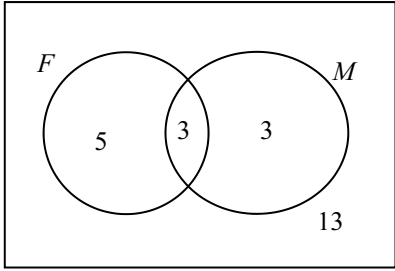
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfww	not from wrong working
soi	seen or implied

<b>1</b>	<b>(a)</b>	12, 14 or 16	<b>1</b>	
	<b>(b)</b>	13	<b>1</b>	
	<b>(c)</b>	14	<b>1</b>	
	<b>(d)</b>	12 or 14	<b>1</b>	
	<b>(e)</b>	16	<b>1</b>	
	<b>(f)</b>	15	<b>1</b>	
<b>2</b>	<b>(a)</b>	6.21 or 6.207 to 6.208	<b>1</b>	
	<b>(b)</b>	144	<b>1</b>	
	<b>(c) (i)</b>	348.4	<b>1</b>	
	<b>(ii)</b>	350	<b>1</b>	
	<b>(d)</b>	0.3    33% $3.33 \times 10^{-1}$ $\frac{1}{3}$	<b>2</b>	<b>B1</b> for 2 numbers in correct place
<b>3</b>	<b>(a)</b>	35	<b>1</b>	
	<b>(b) (i)</b>	40	<b>1 FT</b>	<b>FT 75 – their (a)</b>
	<b>(ii)</b>	114% or 114.2 to 114.3	<b>2 FT</b>	<b>M1</b> for their $\frac{40}{35}$
	<b>(c) (i)</b>	60	<b>2</b>	<b>M1</b> for finding 20% of 75 or $0.8 \times 75$ oe
	<b>(ii)</b>	20	<b>2 FT</b>	<b>B1</b> for 4.80 seen or 480

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4	(a)	4 1 2 8 9 5 2 5 5 6 9 6 2 3 4 4 5 5 7 3 3 3 7 8	3	<b>B2</b> for 1 misplaced or omitted <b>B1</b> for correct but not ordered or for 1 row correct
	(b) (i)	burger	1	
	(ii)	22	2	<b>M1</b> for $\frac{132}{360} \times 60$ oe
5	(a) (i)	16	1	
	(ii)	4	2	<b>M1</b> for correct first step
	(b) (i)	-5.46	2	<b>M1</b> for $3.4(-2.1) + 2.8(0.6)$ or <b>B1</b> for -7.14 or 1.68 seen
	(ii)	$[N=] \frac{M - 3.4L}{2.8}$	2	<b>M1</b> for a correct rearrangement <b>M1</b> for correct division by 2.8
	(c) (i)	$n^{12}$	1	
(ii)	$4y^6$	2	<b>B1</b> for $4y^k$ or $ky^6$	
6	(a)	Correct shapes	2	<b>B1</b> for each
	(b)	6, 9, 12, 15, 18	2	<b>B1</b> for 3 correct <b>FT</b> <i>their</i> areas for shapes 5 and 6
	(c)	$3n$ oe	1	
7	(a)	3 2 4 6 1	2	<b>B1</b> for 3 correct
	(b) (i)	5	1	
	(ii)	6	1	
	(iii)	4	1	
	(iv)	3.73 or 3.727 ...	2	<b>M1</b> for <i>their</i> $\sum fx \div 22$
	(v)	3	2	<b>M1</b> $Q_1 = 2$ or $Q_3 = 5$

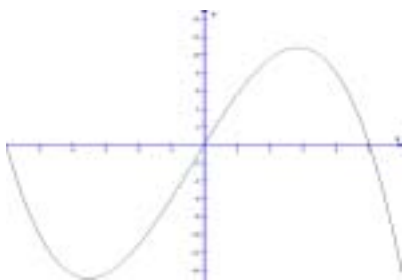
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<p><b>8 (a)</b></p> <div style="text-align: center;">  </div> <p><b>(b) (i)</b> 5</p> <p><b>(ii)</b> 13</p>		<p><b>2</b></p> <p><b>1 FT</b></p> <p><b>1 FT</b></p>	<p><b>M1</b> for 2 areas with correct numbers</p>
<p><b>9 (a)</b></p> $\begin{bmatrix} 2 \\ 3 \end{bmatrix} \quad \frac{1}{3}$ $\frac{3}{4} \quad \frac{1}{4}$ $\frac{9}{10} \quad \frac{1}{10}$ <p><b>(b)</b> <math>\frac{1}{30}</math> oe</p> <p><b>(c)</b> <math>\frac{4}{5}</math> oe</p>		<p><b>3</b></p> <p><b>2</b></p> <p><b>3</b></p>	<p><b>B1</b> for each branch</p> <p><b>M1</b> for <i>their</i> <math>\left(\frac{1}{3} \times \frac{1}{10}\right)</math></p> <p><b>M2</b> for <math>\frac{2}{3} \times \text{their } \frac{3}{4} + \text{their } \left(\frac{1}{3} \times \frac{9}{10}\right)</math></p> <p><b>M1</b> for <math>\frac{2}{3} \times \text{their } \frac{3}{4}</math> or <i>their</i> <math>\left(\frac{1}{3} \times \frac{9}{10}\right)</math> seen</p>
<p><b>10 (a) (i)</b></p> $\frac{3}{4} \text{ oe}$ <p><b>(ii)</b> (0, 2)</p> <p><b>(iii)</b> <math>\left(-\frac{8}{3}, 0\right)</math> oe</p>		<p><b>1</b></p> <p><b>1</b></p> <p><b>2</b></p>	<p><b>M1</b> for <math>\frac{3}{4}x = -2</math> or correct sketch</p>
<p><b>(b)</b></p> $y = \frac{3}{4}x - 3 \text{ oe}$		<p><b>1</b></p>	

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11	(a)		2	B1 for 2 correct
	(b)	5.41 or 5.408...	2	M1 $\sqrt{3^2 + 4.5^2}$
	(c)	[0]64	3	M1 for $\tan x = \frac{4.5}{3}$ oe M1 for 120 – their 56.3
12	(a)	50.3 or 50.26 to 50.27	2	M1 for $2 \times \pi \times 8$
	(b)	201 or 201.0 to 201.1	2	M1 for $\pi \times 8^2$
	(c)	$\frac{360}{8}$ [= 45]	1	
	(d)	67.5	2	M1 for 180 – 45
	(e)	135	1	
	(f) (i)	$\sin 22.5 = \frac{x}{8}$ oe 6.122 to 6.123	M1 A1	
	(ii)	22.6 or 22.62 to 22.63	4	M3 for $\frac{1}{2}\sqrt{8^2 - 3.06^2} \times 6.12$ oe or M2 for $\sqrt{8^2 - 3.06^2}$ or M1 for implicit version
	(iii)	181 or 180.8 to 181.0	1 FT	FT from their (f)(ii) $\times 8$

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<p><b>13 (a)</b></p>		<p><b>2</b></p>	<p><b>B1</b> for correct cubic shape min then max</p>
<p><b>(b) (i)</b></p>	<p><math>(-6, 0)</math> <math>(0, 0)</math> <math>(5, 0)</math></p>	<p><b>2</b></p>	<p><b>B1</b> for 2 correct</p>
<p><b>(ii)</b></p>	<p><math>(-3.51, -14.9)</math> or <math>(-3.513\dots, -14.88 \text{ to } -14.87)</math></p>	<p><b>2</b></p>	<p><b>B1</b> for each co-ordinate</p>
<p><b>(c)</b></p>	<p><math>-14.9</math></p>	<p><b>1 FT</b></p>	