

CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/31 October/November 2016

Paper 3 (Core) MARK SCHEME Maximum Mark: 96

Published

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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
~~:	and an impulied

soi seen or implied

Que	estion	Answer	Mark	Part Marks
1 (8	a)	Square equilateral triangle hexagon	1 2 1	B1 for each word
(1	b)	[x =] 16 [y =] 8	3	B2 for 1 correct or M1 for 12×4 soi
2 (8	a)	55	1	
(1	b)	$ \begin{bmatrix} 14 \\ 12 \\ 0 \\ 0 \\ 0 \\ 1 \\ 2 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ 0 \\ 1 \\ 2 \\ 0 \\ 1 \\ 2 \\ 3 \\ 4 \\ 5 \\ 6 \\ room \\ \end{bmatrix} $	2	B1 for 3 bars with correct height and equal width or 5 bars with correct height
(0	c) (i)	1800	1	
	(ii)	30	1	
	(iii)	348	2	M1 for 6×8 oe
3 (8	a) (i)	21 or 9	1	
	(ii)	-6 or -18	1	
	(iii)	9	1	
	(iv)	$\frac{5}{8}$ oe	1	

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Ç	Juestion	Answer		Part Marks	
	(v)	$\sqrt{3}$ or π	1		
	(b) (i)	1.7321	1		
	(ii)	1.732	1		
	(c)	$\frac{33}{100}$	1		
	(d)	3.4	1		
	(e)	62.5	1		
4	(a) (i)	МОЕУ сао	2	B1 for 2 correct and none incorrect or 3 correct and 1 extra	
	(ii)	O N	2	B1 for 1 correct and none incorrect or 2 correct and 1 extra	
	(b) (i)	[AB =] 12 [DF =] 5	3	B2 for 1 correct or M1 for a correct ratio, equation or correct Pythagoras statement.	
	(ii)	54 : 6 oe	2 FT	FT their AB B1 for 54 or 6 seen or 3^2 seen or M1 for $0.5 \times 4 \times 3$ or $0.5 \times 9 \times$ their AB	
5	(a)	19	1		
	(b)	18	1		
	(c)	2	2	M1 for 17 or 19 seen	
	(d)	18.34	2	M1 for multiplying number of petals by frequencies	
6	(a)	298 291	1 1 FT	FT <i>their</i> 298 – 7	
	(b)	333–7 <i>n</i> oe	2	B1 for $333 - kn$ or $k - 7n$	
	(c)	Yes, with correct justification soi	1		

Question Answer Mark Part Marks 7 (a) $\begin{bmatrix} a =] 31 \\ b =] 42 \\ [c -] 107 \\ [d -] 107 \end{bmatrix}$ 1 1 (b) $\begin{bmatrix} p =] 28 \\ q =] 90 \\ r =] 62 \end{bmatrix}$ 1 1 (b) $\begin{bmatrix} p =] 28 \\ q =] 90 \\ r =] 62 \end{bmatrix}$ 1 1 8 (a) $\begin{bmatrix} \frac{1}{3} \\ \frac{3}{5} \end{bmatrix}$ color 3 B1 for $\frac{3}{5}$ 8 (a) $\begin{bmatrix} \frac{1}{3} \\ \frac{3}{5} \end{bmatrix}$ color 2 M1 for $\frac{2}{5} \times \frac{1}{3}$ (b) $\frac{2}{15}$ oc 2 M1 for $\frac{2}{5} \times \frac{1}{3}$ (c) $\frac{100}{21}$ oc 3 M2 for their (b) + their $\frac{3}{5} \times their \frac{4}{7}$ 9 (a) 1.2 3 M2 for $\frac{100}{1000}$ oc seen $\frac{60}{60}$ or $\frac{100}{5}$ oc seen $\frac{60}{60}$ or M1 for $\frac{64}{40} \times 60$ oc or M1 for $\frac{6}{40} \times 60$ oc or M1 for $\frac{6}{40} \times 60$ oc or M1 for $\frac{6}{40}$	Page 4	Mark Scheme Cambridge IGCSE – October/Novembe	r 2016	Syllabus Paper 0607 31
7 (a) $\begin{bmatrix} a = \\ 311 \\ b = \\ 142 \\ (c = \\ 107 \\ [d -]107 \\ [d -]107 \end{bmatrix}$ 1 (b) $\begin{bmatrix} p - \\ 28 \\ [q =]90 \\ [r =]62 \end{bmatrix}$ 1 1 (b) $\begin{bmatrix} p - \\ 28 \\ [q =]90 \\ [r =]62 \end{bmatrix}$ 1 1 8 (a) $\begin{bmatrix} \frac{1}{3} \\ \frac{3}{2} \end{bmatrix}$ tot cinema to the time a ti				
$\begin{bmatrix} b = \frac{1}{42} \\ [c = \frac{1}{107} \\ [d = \frac{1}{90} \\ [r = \frac{1}{90} \\ [r = \frac{1}{92} \\ [r = \frac{1}{90} \\ [r = \frac{1}{92} \\] \end{bmatrix} \xrightarrow{\text{cale}} \xrightarrow{\text{chema}} \begin{bmatrix} \frac{1}{3} \\ \frac{3}{3} \\ \frac{3}{7} \\ \text{Not chema} \end{bmatrix} \xrightarrow{\text{3}} \begin{bmatrix} 3 \\ \text{B1 for } \frac{3}{5} \\ \text{B1 for } \frac{2}{3} \\ \frac{3}{7} \\ \text{B1 for } \frac{4}{7} \text{ or } \frac{3}{7} \\ \end{bmatrix} \xrightarrow{\text{B1 for } \frac{4}{7} \\ \frac{3}{7} \\ \frac{3}{7} \\ \frac{1}{7} \\ \frac{1}{7} \\ \frac{3}{7} \\ \frac{3}{7} \\ \frac{1}{7} \\ \frac{1}{7} \\ \frac{1}{7} \\ \frac{3}{7} \\ \frac{1}{7} \\ $	Question	Answer	Mark	Part Marks
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$\begin{bmatrix} [d =]107 & 1 \\ 1 \\ [p =]28 \\ [q =]90 \\ [r =]62 & 1 \end{bmatrix}$ 8 (a) $\begin{bmatrix} \frac{2}{3} \\ \frac{2}{3} \end{bmatrix}$ color contained on the contained		$\begin{bmatrix} b = \end{bmatrix} 42$		
(b) $\begin{bmatrix} p = 128 \\ [q =]90 \\ [r =]62 \end{bmatrix}$ 8 (a) $\begin{bmatrix} \frac{2}{3} \\ \frac{2}{3} \end{bmatrix}$ cafe chema				
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9 (a) 1.2 3 M2 for $\frac{1000}{5}$ or seen (b) (i) 9 3 M2 for $\frac{6}{40} \times 60$ or $\frac{5}{60}$ or $\frac{100}{5}$ or seen (i) [0]8 04 1 FT FT 07 55 + their(b)(i)				or M1 for their $\frac{5}{5} \times their \frac{1}{7}$
(b) (i) 9 (i) [0]8 04 $\overline{60}$ or M1 for $\frac{100}{1000}$ or $\frac{5}{60}$ or $\frac{100}{5}$ or seen or M1 for $\frac{6}{40} \times 60$ or $\frac{100}{5}$ or \frac				
(b) (i) 9 (ii) [0]8 04 (b) (i) 9 (ii) [0]8 04 (c) $M1 \text{ for } \frac{100}{1000} \text{ or } \frac{5}{60} \text{ or } \frac{100}{5} o$	9 (a)	1.2	3	M2 for $\frac{1000}{5}$ oe seen
(b) (i) 9 (i) 9 (ii) [0]8 04 (ii) [0]8 04 (iii) [0]8 04 (iii				
(b) (i) 9 (i) 9 (ii) [0]8 04 (ii) [0]8 04 (iii) [0]8 04 (iii				or M1 for $\frac{100}{1000}$ or $\frac{5}{60}$ or $\frac{100}{5}$ oe
(ii) [0]8 04 or M1 for $\frac{6}{40}$ 1 FT FT 07 55 + <i>their</i> (b)(i)				seen
(ii) [0]8 04 or M1 for $\frac{6}{40}$ 1 FT FT 07 55 + <i>their</i> (b)(i)	(h) (i)	9	3	M2 for $\frac{6}{-1} \times 60$ or
(ii) [0]8 04 1 FT FT 07 55 + <i>their</i> (b)(i)				
(ii) [0]8 04 1 FT FT 07 55 + <i>their</i> (b)(i)				or M1 for $\frac{6}{40}$
(iii) $\begin{bmatrix} 0 \end{bmatrix}$ 755 + <i>their</i> (b)(i) + 5 minutes oe 1 FT FT providing before 08 15	(ii)	[0]8 04	1 FT	
	(iii)	[0]7 55 + their (b)(i) + 5 minutes oe	1 FT	FT providing before 08 15

Γ	Page 5	Mark Scheme		Syllabus Paper
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10	(a) (i)	2	2	M1 for correct first step
	(ii)	<i>x</i> < 5	2	M1 for correct first step. Allow =, \leq , >, \geq for M1
	(b)	$ \xrightarrow{ \bigcirc \longrightarrow } \\ -2 \qquad $	1	
	(c) (i)	$12x^{8}$	2	B1 for $12x^k$ or kx^8
	(ii)	$3y^6$	2	B1 for $3y^k$ or ky^6
	(d)	2 drink + 4 chocolate = 6.10 oe [1] chocolate = 0.85 [1] drink + 2(0.85) = 3.05 oe [1] drink = 1.35	M1 A1 M1 A1	SC2 for correct answer with no working.
11	(a)	4.24 or 4.241 to 4.242	2	M1 for $\pi \times 1.5^2 [\times 0.6]$ or better
	(b)	5.5[0] or 5.497 to 5.498	2 FT	M1 for $\pi \times 2^2$ seen
	(c)	59.4 or 59.43 to 59.44	2	M1 for 6×12 – an area seen
12	(a) (i)	Fully correct sketch	2	B1 for axes intercepts approximately correct B1 for correct shape
	(ii)	(0, 6)	1	
	(iii)	(-2, 0) (3, 0)	1 1	
	(iv)	(0.5, 6.25)	1	

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(b) (i)	Correct line	B	l for approximatel l for approximatel tercept	
(ii)	(1.41, 5.41) (-1.41, 2.59)	1 1		