

**CAMBRIDGE INTERNATIONAL EXAMINATIONS**

Cambridge International General Certificate of Secondary Education

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

**0607 CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/31**

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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

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### Abbreviations

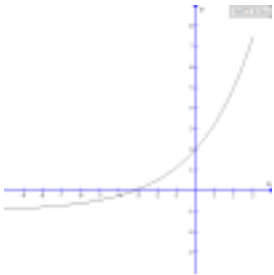
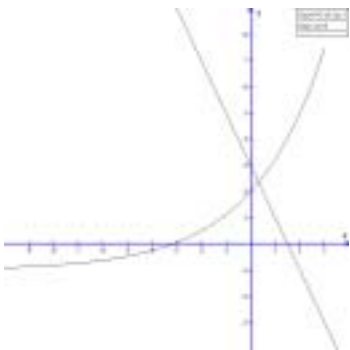
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfw	not from wrong working
soi	seen or implied

Question	Answer	Mark	Part Marks
<b>1</b>			
(a)	300 058	1	
(b)	-6	1	
(c)	21 600	1	
(d)	0.06	1	
(e)	78	1	
(f)	23	1	
(g)	$\frac{13}{20}$	2	M1 for $\frac{65}{100}$
(h)	76, 57	2	M1 for dividing by 7 soi
<b>2</b>			
(a)	$8x - 2y$ as final answer	2	B1 for $8x - ky$ or $kx - 2y$ as final answer
(b)	16	2	M1 for $2 \times 3 + -2 + 3 \times 4$ seen or B1 for 6 and 12 seen
(c)	5.1	2	B1 for 8.4 seen or M1 for $18.6 = 2x + 3 \times 2.8$ seen
(d)	2	2	M1 for correct first step
(e)	$\begin{array}{r} 0 \quad -1 \\ 2 \quad 3 \\ 3 \quad 5 \end{array}$	2	B1 for -1 B1 for 3 and 5
<b>3</b>	$a = 90$ $b = 26$ $c = 64$ $d = 116$	1 1 1 1 FT	FT 180 – their c
<b>4</b>			
(a)	345	2	M1 for $30 \times 10 + 3 \times 15$
(b)	1110	2 FT	M1 for $5 \times 33 + 600 + \text{their } 345$
(c)	37	2 FT	M1 for their $\frac{1110}{30}$

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5	(a) (i)	8	1	
	(ii)	5.5	1	
	(iii)	4.5	1	
	(iv)	6	1	
	(v)	5.75	1	
(b)	(i)	2 1 3 0 4 1 5 2 6 1 7 0 8 3	1	
	(ii)	Correct bar chart	2 FT	B1 FT for 4 bars correct
6	(a)	3750	2	M1 for $25 \times 75 \times 2$
	(b) (i)	4150	3	M2 for $2(25 \times 2 + 75 \times 2 + 25 \times 75)$ or B1 for 50, 150, 1875 soi
	(ii)	0.415	1 FT	FT their (b)(i) $\div 10\,000$
	(c)	$5 \times 3 + 6 \times 4 + 4 \times 2.5 + 3 \times 7$ [= 70] yes	1 1 FT	M1 for correct method A1 FT dep their 70 [strict]
7	(a)	-5 -12	1 1	
	(b)	$30 - 7n$	2	B1 for $30 - kn$ , $k \neq 0$ , or $j - 7n$
8	(a)	$-\frac{1}{2}$ oe	2	M1 for dividing by 2 oe
	(b)	$-\frac{1}{2}$ oe	1 FT	FT their $-\frac{1}{2}$
	(c)	$[y =] -\frac{1}{2}x + 6$	1 FT	FT their (b)

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<b>9</b>	<b>(a) (i)</b>	2, 3, 6	<b>1</b>	
	<b>(ii)</b>	3, 6	<b>1</b>	
	<b>(iii)</b>	2, 3, 4, 5, 6	<b>1</b>	
	<b>(iv)</b>	1, 2	<b>1</b>	
	<b>(v)</b>	4, 5	<b>1</b>	
	<b>(b)</b>	6	<b>1</b>	
<b>10</b>	<b>(a)</b>	Correct line $y = 3$	<b>1</b> <b>1 FT</b>	<b>FT</b> <i>their</i> line $y = k$ , $2 \leq k \leq 4$ or $x = 4$
	<b>(b)</b>	$\begin{pmatrix} 4 \\ -3 \end{pmatrix}$	<b>2</b>	<b>B1</b> for $\begin{pmatrix} k \\ -3 \end{pmatrix}$ or $\begin{pmatrix} 4 \\ k \end{pmatrix}$ If 0 scored <b>SC1</b> for $\begin{pmatrix} -4 \\ 3 \end{pmatrix}$ or $\begin{pmatrix} -3 \\ 4 \end{pmatrix}$
	<b>(c)</b>	(0, 0) $90^\circ$ [anti-clockwise] or $-270^\circ$	<b>1</b> <b>1</b>	
<b>11</b>	<b>(a)</b>	3 min 12 seconds	<b>2</b>	<b>B1</b> for 3.2
	<b>(b)</b>	105	<b>3</b>	<b>M2</b> for $\frac{168}{1.6}$ oe or <b>M1</b> for a correct time conversion.
<b>12</b>	<b>(a)</b>	$\frac{1}{80}, \frac{79}{80}$  $\frac{2}{3}, \frac{1}{3}$  $\frac{1}{50}, \frac{49}{50}$	<b>3</b>	<b>B1</b> for each pair
	<b>(b)</b>	$\frac{1}{240}$	<b>2</b>	<b>M1</b> for $\frac{1}{80} \times \frac{1}{3}$
	<b>(c)</b>	Accept 1 or 2 days	<b>2 FT</b>	<b>M1 FT</b> for $250 \times$ <i>their</i> <b>(b)</b>

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13	(a)	[The triangle is] equilateral $OA = 46$ or angles $A$ and $B$ are $60^\circ$	1 1	
	(b)	48.2 or 48.17 to 48.18	2	M1 for $\frac{60}{360} \times 2 \times \pi \times 46$
	(c)	1110 or 1107 to 1108	2	M1 for $\frac{60}{360} \times \pi \times 46^2$
	(d)	916 or 915.4 to 916.3	3	M1 for $46\cos 30$ oe ( $= 39.837\dots$ ) and M1 FT dep for $0.5 \times 46 \times$ <i>their</i> 39.837...
	(e)	194 or 195 or 190.7 to 194.6	1 FT	FT <i>their</i> (c) – <i>their</i> (d)
14	(a)		2	M1 for correct shape through 3 quadrants A1 for approximately correct axis intercepts (less than half way on both axes)
	(b)	-3.17 or -3.170 to -3.169	1	
	(c)	$y = -1$	1	
	(d)		2	B1 for negative gradient B1 for correct y-intercept at approximately 3
	(e)	[x =] 0.323 or 0.3225 to 0.3226 [y =] 2.35 or 2.354 to 2.355	1 1	If 0 scored SC1 for correct co-ordinates reversed.