Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/63**

Paper 6 (Extended) **May/June 2016**

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.

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

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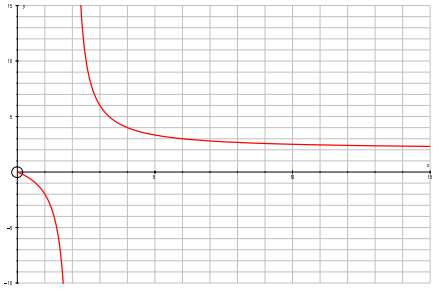
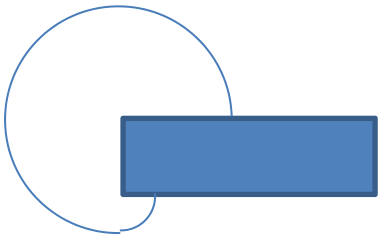
Abbreviations

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
soi seen or implied

A INVESTIGATION AREAS AND PERIMETERS			
Question	**Answer**	**Marks**	**Part Marks**
1 (a)	30 26	**1**	
(b) (i)	6	**1**	
(ii)	18	**1FT**	**FT** $2 \times$ (*their* 6) + 6
(c) (i)	$7x$ oe	**1**	
(ii)	$14+2x$ oe isw	**1**	
(iii)	2.8 oe	**FT1**	**FT** *their* c(i) and c(ii) if same form **C** opportunity
2 (a) (i)	xy oe	**1**	
(ii)	$2x+2y$ oe	**1**	
(b)	$xy-2y=2x$	**1**	
	$y(x-2)=2x$	**1**	
3 (a)	2.4	**1**	**C** opportunity
(b)	–2	**1**	**C** opportunity
(c)	2 correct curves 	**2**	**B1** for each branch **SC1** for correct curve but branches joined **C** opportunity
(d)	$[0 \leqslant]x \leqslant 2$	**1**	

Question	Answer	Marks	Part Marks
4 (a)	$xy < 2x + 2y$ $xy - 2y < 2x$ $y(x-2) < 2x$	**1**	
(b)	Point clearly between x-axis, $x = 2$ and curve	**1**	
(c)	Valid check using co-ordinates where Area < Perimeter	**1**	Not dependent on (b)
5	[Yes,] showing solution of 6	**1**	**C** opportunity
Communication in 2 from 1(c)(iii), 3(a), 3(b), 3(c) or 5		**1**	

B MODELLING HOW MUCH GRASS CAN THE GOAT EAT?

Question	Answer	Marks	Part Marks
1	314 or 314.1…	**1**	
2 (a)	236 or 235.6…	**1FT**	**FT** $\frac{3}{4}$ (*their* 314) **C** opportunity
(b)	Quarter circle shown on diagram or 5m radius implied	**1**	
3 (a)		**1**	A $\frac{3}{4}$ circle and a $\frac{1}{4}$ circle of smaller radius **C** opportunity
(b)	$236 + \pi$ oe or 238.8 or 238.76 …	**2FT**	**FT** *their* 2(a) **M1** for $\frac{1}{4}\times\pi\times 2^2$ oe **C** opportunity
4 (a) (i)	$0<x<8$	**2**	**B1** for each limit
(ii)	$\frac{3}{4}\pi x^2$ oe	**1**	
(b) (i)	$8<x<15$	**2**	**B1** for each limit
(ii)	$\frac{3}{4}\pi x^2+\frac{1}{4}\pi(x-8)^2$ oe isw	**2FT**	**FT** *their* (a)(ii) **M1** for $+\frac{1}{4}\pi k^2$
(c) (i)	(*their* (b)(ii)) + $\frac{1}{4}\pi(x-15)^2$	**2FT**	**FT** *their* (b)(ii) **M1** for (*their* (b)(ii)) + $\frac{1}{4}\pi k^2$ or $+\frac{1}{4}\pi(x-15)^2$ **C** opportunity

Question	Answer	Marks	Part Marks
(ii)	16.5 [m]	1FT	**FT** any model including a term in $(x-a)^2$ **C** opportunity
(d)	14.1 [m]	2	**M1** for attempt at solving with 500 in any model including a term in $(x-a)^2$ **C** opportunity
Communication in 3 of 2(a), 3(a), 3(b), 4(c)(i), 4(c)(ii) or 4(d)		2	**C1** if seen in 2 of these