



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/63**

Paper 6 (Extended)

**May/June 2016**

MARK SCHEME

Maximum Mark: 40

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**Published**

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### Abbreviations

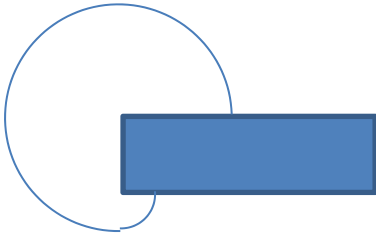
awrt	answers which round to
cao	correct answer only
dep	dependent
FT	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
nfww	not from wrong working
soi	seen or implied

A INVESTIGATION		AREAS AND PERIMETERS		
Question	Answer	Marks	Part Marks	
1 (a)	30 26	1		
	(b) (i)	6		
	(ii)	18	1FT	FT $2 \times (\text{their } 6) + 6$
	(c) (i)	$7x$ oe	1	
	(ii)	$14+2x$ oe isw	1	
	(iii)	2.8 oe	FT1	FT <i>their</i> 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)	$[0 \leq ]x \leq 2$	1	



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

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

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