

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the May/June 2009 question paper
for the guidance of teachers

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/03

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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M marks are given for a correct method.

A marks are given for an accurate answer following a correct method.

B marks are given for a correct statement or step.

D marks are given for a clear and appropriately accurate drawing.

P marks are given for accurate plotting of points.

E marks are given for correctly explaining or establishing a given result.

Abbreviations

cao correct answer only

cso correct solution only

ft follow through

oe or equivalent

soi seen or implied

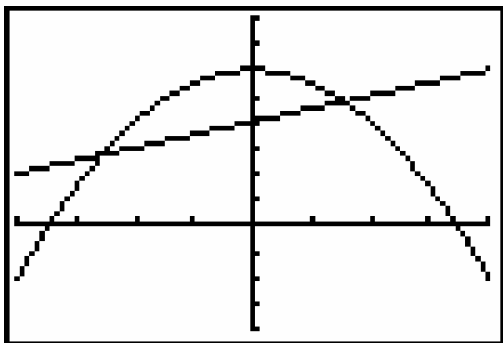
ww without working

www without wrong working

1	(a) (i)	55	B1	
	(ii)	7	B1	
	(iii)	11	B1	
	(b) (i)	82	B1	
	(ii)	38	B1	
	(c)	$\frac{89}{100}$ oe	B1	
	(d)	1780 ft	B1	ft their (c) \times 2000 [7]

2	(a) (i)	7	B1	
	(ii)	7.5	B1	
	(iii)	7.9	B1	
	(iv)	3	B1	
	(v)	9	B1	
	(b)	Radius drawn giving angles of 72° and $36^\circ \pm 2^\circ$ Labels 9 and 10 correctly placed	B1 B1	Must be ruled If 2 sectors and 9 is larger
	(c)	Ruled bars of heights 5, 2, 2, 1	B3	B2 for 3 correct, B1 for 2 correct. Deduct 1 for freehand but reasonable
	(d)	30	B2	If B0 , M1 for $3 \div 10 \times 100$ oe [12]

3 (a)	150	B2	If B0, M1 for $180 \div 6 \times 5$
(b)	$121 \div 11$ oe $\times 6$ oe	M1 M1	Accept $6 \times 11 = 66$, $5 \times 11 = 55$ M1 $55 + 66 = 121$ M1
(c)	4.76 (4.761 – 4.762))	B2	If B0, M1 for $3 \div 63 \times 100$ oe
(d)	63×1000 6.3×10^4 www3	M1 A1A1	SC2 for 63×10^3 oe
(e) (i)	14.3 (14.28 – 14.29)	B2	M1 for $100 \div 7$
(ii)	6.9(0) (6.896 – 6.897)	B2	If B0, M1 for $100 \div 14.5$ [13]

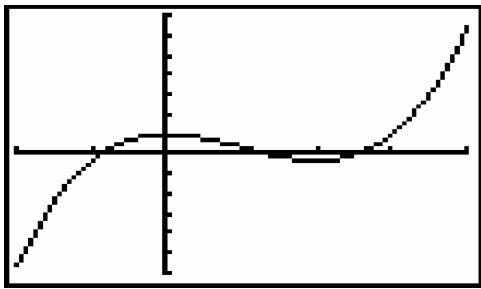
4 (a)	 <p>$y = \frac{1}{2}x + 2$ drawn</p>	B1 B1	For approx straight line with grad approx $\frac{1}{2}$, reaching curve twice For approx straight line with y-intercept approx 2, also reaching curve twice
(b)	-1.2808, 0.7808	B1B1	Accept 2dp (-1.28 and 0.78) or better -1.281 to -1.280 , 0.781 or 0.7807 to 0.7808 SC1 - 1.3, 0.8
(c)	Line would not meet the curve even if extended oe	B1	[5]

5 (a)	42	B2	If B0, M1 for $0.5 \times 12 \times 7$
(b)	63	B2	If B0, M1 for $0.5 \times 6 \times 7 +$ their 42 oe
(c)	105	B1	
(d)	35	B1	[6]

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6 (a)	7 correct points	P3	P2 for 5 or 6 correct, P1 for 3 or 4
(b)	Negative	B1	
(c) (i)	3	B1	
(ii)	Straight line through (6, their 3) with negative gradient through (8, 0.5 to 1.5)	M1 A1	Plotted or implied (within 2 mm of (\bar{x}, \bar{y})) A0 if not ruled For 3 to 8 at least [7]

7 (a) (i)	37.68 – 37.7	B2	If B0 , M1 for $\frac{1}{3} \times \pi \times 3^2 \times 4$ Accept 12π
(ii)	283 (282.6 – 282.8) ft	B2 ft	If B0 , M1 for (i) $\times 7.5$
(b) (i)	75.36 – 75.41	B3	If B0 , M1 for $\pi \times 3 \times 5$ M1 for $\pi \times 3^2$ Accept 24π
(ii)	0.007536 – 0.007541 ft	B1 ft	ft their (i)
(iii)	928 cao	B2	If B0 , M1 for $7 \div$ their (ii) [10]

8 (a)	 <p>Cubic shape with max then min Cross x-axis 3 times 2 x-intercepts positive Max point close to (0, 1)</p>	B1 B1 B1 B1	At least from –2 to 4 Dependent on previous B1 Dependent on first B1
(b) (i)	1	B1	
(ii)	3.04(3.041 – 3.042)	B1	
(c)	–0.879, 1.35, 2.53 (–0.8794 to –0.8793, 1.347..., 2.532...)	B1, B1 , B1	If B0 , SC2 for –0.88, 1.3, 2.5 or SC1 for 2 of these. If B1 , SC1 for other two to 2 sf
(d)	(2, –0.333)	B1, B1	Allow –0.33 or $-\frac{1}{3}$
(e)	–1.43 (–1.426 to –1.425)	B1	
(f)	–5.67 to 6.33 (–5.666 to –5.667 to 6.3333..) oe	B1, B1	Allow –5.6 or –5.7 and 6.3 [14]

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9 (a) (i)	55	B2	M1 for $\frac{1}{2}(180 - 70)$
(ii)	110	B2	M1 for 180–70 or for 360–90–90–70 soi (may be on diagram) or for 180 – 2[90 – their (i)] ft
(b)	Diameter	B1	[5]

10 (a)	$x = 1$	B1	
(b)	$-\frac{4}{7}$ oe -0.571 or $-0.5714\dots$	B2	B1 for – ve, B1 for $\frac{4}{7}$ Allow -0.57
(c)	(4.5, 4)	B1, B1	
(d)	(their 4) ² + (their 7) ² 8.06 (8.062...) ft www2	M1ft A1ft	ft from (b)
(e)	$\tan(\text{angle}) = \frac{\text{their } 4}{\text{their } 7}$ oe 29.7 (29.74 – 29.75....) ft www2	M1ft A1ft	ft from (b) or (d) Radians 0.519 give M1A1 [9]

11 (a)	$\frac{4}{5}$ cao	B2	If B0 , M1 for $\frac{2 \times 7}{5} - \frac{4}{2}$ implied by $\frac{8}{10}$ oe
(b)	4, 5	B1, B1	May be embedded
(c)	20	B2	If B0 , M1 for $\frac{2x}{5} = 8$ (Must reach correct equation with one variable term and one constant term only.)
(d)	$\frac{y}{2} = \frac{2x}{5} - 1$ oe $y = 2\left(\frac{2x}{5} - 1\right)$ oe www 2 $\frac{4x}{5} - 2, \frac{4x - 10}{5}$	M1 M1	for re-arranging correctly for + or $-\frac{y}{2}$ oe for multiplying by 2 correctly (any order) Mark final answer [8]