

## **MARK SCHEME for the October/November 2012 series**

### **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.

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

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the October/November 2012 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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<b>1</b>	(a) 375 (b) 15 (c) 270 (d) 54 (e) $\frac{9}{20}$	1 1 2 2 2	<b>M1</b> for $450 \div 5$ soi <b>M1</b> for $\frac{150}{1000} \times 360$ soi <b>B1</b> for $\frac{450}{1000}$ soi
<b>2</b>	(a) (0, 3) (b) (8, 0) (c) $-\frac{3}{8}$ (d) (4, 1.5) oe (e) $\begin{pmatrix} 4 \\ 1.5 \end{pmatrix}$	1 1 2FT 2FT 1FT	<b>FT</b> from <i>their</i> $3 \div 8$ <b>M1</b> for attempt to use gradient formula <b>B1, B1 FT</b> from <i>their</i> (a) and (b) <b>FT</b> from <i>their</i> (d)
<b>3</b>	(a) 432 (b) (i) 216000 (ii) 0.216(000) (c) 9450	2 2FT 1FT 2	<b>B1</b> for either 288, 144 or 576 seen or <b>M1</b> for correct method shown <b>FT</b> <i>their</i> (a) $\times 500$ <b>M1</b> for 500 soi or <b>M1</b> for Area $\times$ length <b>FT</b> <i>their</i> (b)(i) $\div 100^3$ <b>M1</b> for $200 \times 5 \times 9.45$
<b>4</b>	(a) 56.25 (b) $x = 2, y = 6$ (c) $6x^8$ final answer (d) 6 (e) 5	2 2 2 3 2	<b>M1</b> for $(5.2 - (-2.3))$ soi by 7.5 or figs 5625 seen <b>SC1</b> for 8.41 <b>B1 B1</b> <b>B1</b> for $kx^8$ or $6x^k$ <b>B2</b> for $3x - 13 = 5$ or better <b>B1</b> for $6x - 10$ or $3x + 3$ soi <b>B1</b> for $2 \times 2^4$ soi or for $16 + 16$ soi

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5	(a)	1	1	
	(b)	2.15	1	
	(c)	2	1	
	(d)	1	1	
	(e)	4	1	
6	(a)	$70^\circ$	1	
	(b)	$y = 30^\circ$ $z = 60^\circ$	1 2FT	FT 90 – <i>their</i> $y$ M1 for angle $TAO = 90$ soi
	(c)	$116^\circ$	3	B1 for $720^\circ$ seen or implied (e.g. by 580) and M1 for $5w + 140 = \textit{their}$ 720 soi or B1 for $320^\circ$ and M1 for $\frac{320}{5}$
7	(a)	24	3	M2 for $\sqrt{26^2 - 10^2}$ M1 for $26^2 = 10^2 + x^2$ oe
	(b)	120	2FT	FT $10 \times \textit{their}$ $24 \div 2$ M1 for $0.5 \times 10 \times \textit{their}$ 24
	(c)	22.6 (22.61 to 22.62)	2FT	FT $\textit{their}$ 24 used correctly in trig ratio M1 for correct use of trig ratio
8	(a)	Correct graph	3	M1 for quadratic opening upwards M1 for $x$ -intercepts close to 0 and 4 M1 for smooth curve <b>dep</b> on first M1
	(b)	(2, -8)	1	
	(c)	$x = 2$	1	
	(d)	Correct graph	2	M1 for $y$ -intercept at approximately -4, or M1 for straight line with positive gradient
	(e)	(0.392, -2.825), (5.108, 11.325)	3	B1 B1 for correct answers to 2 decimal place accuracy or better A1 for answers to 3 decimal places

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9	(a) (i)	$\frac{5}{9}$ (0.555..., 55.55...%)	1	
	(ii)	$\frac{4}{9}$ (0.444[4], 44.4[4]%)	1	
	(iii)	$\frac{3}{9}$ oe (0.333..., 33.3...%)	1	
	(iv)	$\frac{3}{9}$ oe (0.333..., 33.3...%)	1	
	(v)	$\frac{2}{9}$ (0.222..., 22.2...%)	1	
	(b)	7, 8, 9	1	
10	(a)	500	3	<b>M2</b> for $\frac{5000 \times 4 \times 2.5}{100}$ <b>M1</b> for $5000 \times \frac{2.5}{100}$ <b>SC2</b> for answer 5500
	(b)	19.06	4FT	<b>M2</b> for $5000(1.025)^4$ oe <b>M1</b> for $5000(1.025)^n$ oe $n$ integer $> 1$ <b>A1</b> for 5519.06 (5520, 5519, 5519.1, 5519.10, 5519.064...) <b>B1FT</b> indep for <i>their</i> 5519.06 – 5000 – <i>their</i> (a) but only if at least <b>M1</b> earned

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11 (a)	707 (706.5 to 707.0)	2	<b>M1</b> for $\pi \times 15^2$ or better
(b)	118 (117.7 to 117.8...)	1FT	<b>FT</b> <i>their</i> (a) $\div 6$
(c)	15.7 (15.70 to 15.71)	2	<b>M1</b> for $\frac{60}{360} \times 2 \times \pi \times 15$ or better soi
(d)	37.5	4	<b>M3</b> for $\frac{6 \times 2.75 - 12}{12} \times 100$ or $\frac{6 \times 2.75}{12} \times 100 - 100$ oe <b>M2</b> for $\frac{6 \times 2.75 - 12}{12} [\times 100]$ or $\frac{6 \times 2.75}{12} \times 100$ oe or <b>M1</b> for <i>their</i> 16.5 – 12 oe or <b>B1</b> for 16.5 seen
12 (a)	$\frac{4}{5}$	1	
(b) (i)	correct tree diagram	2FT	<b>FT</b> <i>their</i> (a) <b>B1</b> for one correct pair for plant 2
(ii)	$\frac{1}{25}$ (0.04, 4%) cao	2FT	<b>FT</b> $\frac{1}{5} \times \textit{their} \frac{1}{5}$ <b>M1</b> for $\frac{1}{5} \times \textit{their} \frac{1}{5}$
(iii)	$\frac{8}{25}$ (0.32, 32%) cao	3FT	<b>FT</b> $\frac{1}{5} \times \textit{their} \frac{4}{5} + \textit{their} \frac{4}{5} \times \textit{their} \frac{1}{5}$ <b>M2</b> for $\frac{1}{5} \times \textit{their} \frac{4}{5} + \textit{their} \frac{4}{5} \times \textit{their} \frac{1}{5}$ oe <b>M1</b> for one of products
13 (a)	Translation only, $\begin{pmatrix} -3 \\ -2 \end{pmatrix}$ oe	2	<b>B1</b> for translation <b>B1</b> for column vector – can be in words
(b)	Reflection only, $x = -2$	2	<b>B1</b> for reflection, <b>B1</b> for equation of line