

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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1	(a) 375 (b) 15 (c) 270 (d) 54 (e) $\frac{9}{20}$	1 1 2 2 2	 M1 for $450 \div 5$ soi M1 for $\frac{150}{1000} \times 360$ soi B1 for $\frac{450}{1000}$ soi
2	(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	 FT from <i>their</i> $3 \div 8$ M1 for attempt to use gradient formula B1, B1 FT from <i>their</i> (a) and (b) FT from <i>their</i> (d)
3	(a) 432 (b) (i) 216000 (ii) 0.216(000) (c) 9450	2 2FT 1FT 2	B1 for either 288, 144 or 576 seen or M1 for correct method shown FT <i>their</i> (a) $\times 500$ M1 for 500 soi or M1 for Area \times length FT <i>their</i> (b)(i) $\div 100^3$ M1 for $200 \times 5 \times 9.45$
4	(a) 56.25 (b) $x = 2, y = 6$ (c) $6x^8$ final answer (d) 6 (e) 5	2 2 2 3 2	M1 for $(5.2 - (-2.3))$ soi by 7.5 or figs 5625 seen SC1 for 8.41 B1 B1 B1 for kx^8 or $6x^k$ B2 for $3x - 13 = 5$ or better B1 for $6x - 10$ or $3x + 3$ soi B1 for 2×2^4 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°	1	
	(b)	$y = 30^\circ$ $z = 60^\circ$	1 2FT	FT 90 – <i>their</i> y M1 for angle $TAO = 90$ soi
	(c)	116°	3	B1 for 720° seen or implied (e.g. by 580) and M1 for $5w + 140 = \textit{their}$ 720 soi or B1 for 320° 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 dep 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	M2 for $\frac{5000 \times 4 \times 2.5}{100}$ M1 for $5000 \times \frac{2.5}{100}$ SC2 for answer 5500
	(b)	19.06	4FT	M2 for $5000(1.025)^4$ oe M1 for $5000(1.025)^n$ oe n integer > 1 A1 for 5519.06 (5520, 5519, 5519.1, 5519.10, 5519.064...) B1FT indep for <i>their</i> 5519.06 – 5000 – <i>their</i> (a) but only if at least M1 earned

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