

UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

**MARK SCHEME for the October/November 2011 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.

Mark schemes must be read in conjunction with the question papers and the report on the examination.

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Cambridge is publishing the mark schemes for the October/November 2011 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.

1	(a)	112	1	
	(b)	210	1	
	(c) (i)	2 : 3	1	
	(ii)	84	FT2	FT their (b) and (c)(i) M1 for their $210 \div \text{their } 5 \times 2$ oe
	(iii)	1638	FT2	FT their (b) and (c)(ii) B1 for either their (c)(ii) $\times 6$ or their 126×9 soi
2	(a)	1090	1	
	(b)	900	1	
	(c)	700	1	
	(d)	30	2	B1 for $\frac{3}{10}$ soi
	(e)	$\frac{6}{10}$ oe	1	isw
	(f)	950	1	
3	(a)	$8x + 6$ oe	3	B2 for $kx + 6$ or $6x + k$ or M1 for $2x - 6 + 6x + 12$
	(b)	$3x(x - 3y)$	2	B1 for $x(3x - 9y)$ or $3(x^2 - 3xy)$
	(c)	3.5 oe	2	M1 for $2x = 7$ oe
	(d)	12	2	M1 for $2 \times 3 - 3 \times -2$ or better

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4	<p>(a) Correct sketch</p> <p>(b) (0, -4)</p> <p>(c) $x = 0$</p> <p>(d) $(y) \geq -4$ or $-4 \leq y \leq 5$</p> <p>(e) (-2, 0) (2, 0)</p> <p>(f) Correct sketch</p> <p>(g) (-2.21, 0.89) (-2.212..., 0.8938 to 0.8939) (2.71, 3.36) (2.712..., 3.356.)</p>	<p>2 B1 for smooth curve opening up B1 for vertex on y-axis above -5</p> <p>1</p> <p>1</p> <p>1 isw</p> <p>2 B1 for each co-ordinate pair</p> <p>1 Positive gradient with y-intercept above the origin</p> <p>2 B1 for any two or three co-ordinates correct</p>
5	<p>(a) 150</p> <p>(b) 5000×1.03^2 or $(5000 + 150) \times \frac{3}{100} + 5150$ oe</p> <p>(c) (i) 5627.54 (or 5630 or 5627 to 5628)</p> <p>(ii) 627.54 (or 630 or 627 to 628)</p>	<p>2 B1 for $\frac{3}{100}$ soi</p> <p>M2 M1 for $(5000 + 150) \times \frac{3}{100}$</p> <p>2 M1 for continuing <i>their</i> sequence correctly for another year or for sight of compound interest formula</p> <p>FT1 FT <i>their</i> (c)(i) – 5000</p>
6	<p>(a) $6x$</p> <p>(b) $6x + 4y = 27$</p> <p>(c) $2x + 3y = 14$</p> <p>(d)</p> <p>$(x) = 2.5(0)$ $(y) = 3$</p>	<p>1</p> <p>1</p> <p>1</p> <p>FT <i>their</i> (b) and (c) M1 for elimination of one variable, condoning 1 numerical slip, or a sketch of the two straight lines. A1A1 (B1 if answers reversed in answer spaces) SC1 for answers in either order if no working seen</p>

7	(a)	20	1	
	(b)	38.3	3	M2 for $\cos 40 = \frac{x}{50}$ oe If M0 then B1 for correct distance indicated on diagram
	(c)	220°	1	
8	(a)	$x = 140, y = 80$	2	B1 B1 for each angle
	(b)	$p = 90, q = 150$	2	B1 B1 for each angle
	(c) (i)	60	1	
	(ii)	120	1	
	(iii)	80	1	
(d)	16	4	M2 for $\sqrt{10^2 - 6^2}$ (M1 for $x^2 + 6^2 = 10^2$) M1ft for <i>their</i> $\sqrt{\quad} \times 2$ but only if answer less than 20	
9	(a)	150	1	
	(b)	130 (129 – 131)	1	
	(c) (i)	15	FT1	<i>their (a)</i>
(ii)	64 to 66	FT2	<i>their (c)(i)</i> M1 <i>their (a) – (c)(i)</i>	

10	(a)	Kite	1	
	(b)	Reflection, x -axis ($y = 0$) or Rotation 180° , centre $(4, 0)$	2	B1 B1 independent B1 for 180° , B1 for centre $(4, 0)$
		or Enlargement scale factor -1 , centre $(4, 0)$		B1 for scale factor -1 , B1 for centre $(4, 0)$
	(c)	Translation $\begin{pmatrix} -12 \\ -10 \end{pmatrix}$	2	B1 B1 independent
	(d)	Correct rotation	2	B1 for any 90° rotation with any centre
(e)	Correct enlargement	2	B1 for any enlargement scale factor 2	
11	(a) (i)	3	1	
	(ii)	4	FT1	7 – <i>their (a)(i)</i>
	(b)	24	FT1	$6 \times$ <i>their (a)(ii)</i>
	(c)	14	FT3	FT $\pi \times$ <i>their</i> 3^2 M1 for $\pi \times$ <i>their</i> 3^2 A2 or A1 for 14.13 to 14.14 SC1ft for answer to 2 significant figures if seen with more
	(d)	1 330 000 (1 334 000 to 1 335 000)	FT2	FT (<i>their (b) + their (c)</i>) $\times 35000$ M1 for (<i>their (b) + their (c)</i>) $\times 35$ soi
	(e) (i)	20	2	M1 for $35 \div 105$ soi
(ii)	32	FT2	FT $52 -$ <i>their (e)(i)</i> B1 for 52 minutes seen	

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12 (a)	$\frac{8}{12}$ oe (0.667 or 0.6666 to 0.6667)	1	
(b)	$\frac{7}{11}$ (0.636 or 0.6363 to 0.6364)	2	B1 for 7 as numerator, B1 for 11 as denominator.
(c)	$\frac{8}{12}, \frac{4}{12}, \frac{7}{11}, \frac{4}{11}, \frac{8}{11}, \frac{3}{11}$	FT2	<i>their (a)</i> and <i>their (b)</i> B1 for any one correct pair
(d)	$\frac{64}{132}$ oe (0.485 or 0.4848...)	FT3	M1 for one (<i>their</i>) correct pair multiplied M1 for addition of two fractions