

CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

MARK SCHEME for the October/November 2012 series

0444 MATHEMATICS (US)

0444/33

Paper 3 (Core), maximum raw mark 104

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.

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Abbreviations

cao	correct answer only
cso	correct solution only
dep	dependent
ft	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
www	without wrong working

Qu.	Answers	Mark	Part Marks
1	(a) 2 hours 45 minutes oe	1	
	(b) 26 000	1	
	(c) 20	2	M1 $5 \div 0.25$ or $5000 \div 250$
	(d) (i) 30 and 60	1	
	(ii) 72	1	
	(iii) 60	1	
(e)	(i) fully correct bar chart	3	B1 correctly scaled frequency axis B2 correct height of bars or B1 correct height of 5 or 6 bars or all bars correct height but unequal widths or gaps
	(ii) 1	1	
2	(a) (i) (0)355	2	B1 0025 or 2030 seen SC1 2055 as answer
	(ii) 26° or -26°	1	
	(b) 135.43 cao	2	M1 $7854 \div 56$ implied by 135 (428...)
3	(a) (i) 8, 12, 20	2	B1 for any two correct May be indicated on mapping diagram B1 for $5x$
	(ii) 1, 2, 4, 8	1	
	(b) (i) $5x + 25$	2	B1 for +25
	(ii) [25], 30, 35, 40, 45, 50	2	B1 for at least 3 correct, -1 for each extra or SC1 for $25 \leq T(x) \leq 50$
4	(a) 240000	1	
	(b) 1200, 450, 750	3	SC1 $2400 \div 16$ implied by 150 and B1 2 correct amounts
	(c) 224973	3	M2 224972.8 or 200000×1.04^3 M1 200000×1.04^2 or 216320

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	(d) (i) 2250 900 36	1, 1, 1	SC1 if their numbers add to 3150
	(d) (ii) 2 correct sectors $\pm 2^\circ$ correct labels	1 1	
5	(a) (i) 2.5 or $5/2$ or $2\frac{1}{2}$ (ii) 4.5 or $9/2$ or $4\frac{1}{2}$ (b) (x=) 3, (y =) -4	2 3 4	M1 $6x - 2x = 8 + 2$ or better M1 $8y - 12$ or $2y - 3 = 6$ M1 $8y = 36$ ft <i>their</i> first step M1 coefficient of x or y the same M1 for addition or subtraction A1 for 1 correct answer A1 for second correct answer ww both correct B4 ww one correct B0
6	(a) Parallelogram (b) Rotation, 90° clockwise, about origin (c) (i) Correct reflection (ii) Correct translation (iii) Correct enlargement	1 3 2 2 2	B1 Each part B1 reflection in the x axis B1 6 left or 4 down B1 Correct size, wrong position
7	(a) (i) $3 - 1$ (ii) subtract 4 (iii) $-4n + 23$ oe final answer (b) 8, 10, 12 (c) 27, $3n + 3$ oe final answer	2 1 2 2 3	B1 1 mark each If B0 award B1 if term 2 - term 1 = - 1 M1 $-4n + k$ as answer M1 2 correct terms B1 27 B1 $3n = k$ or $jn + 3$ ($j \neq 0$)
8	(a) 63 (Angles on a straight) line (add to) 180 (b) 90 (Angle in a) semi circle (c) 117 Corresponding (angles) (d) 90 Tangent and radius	1 1 1 1 1 1	

9	(a) 5.4(0)	2	M1 $\tan 42 = \frac{DF}{6}$ or better
	(b) 32.4	2ft	$\frac{12 \times 5.4}{2}$ ft <i>their</i> 5.4
	(c) 5.66	3	M2 $\sqrt{6-2}$ M1 $6^2 - 2^2 + AH$ or better
	(d) 64	2	M1 $12 + 18 + 14 + 3 + 2 + 15$
	(e) 33.3 cao	4	M1 $(12 \times 18) + (2 \times 3)$ oe B1 222 M1 $222 \text{ ft} \times 0.15$
10	(a) -1, -5, -1, 4	3	M2 3 correct M1 1 correct
	(b) Correct graph	4	B3 All points correctly plotted ft B2 6 or 7 points plotted ft B1 4 or 5 points plotted ft B1 Smooth curve
	(c) (i) $x = -1$ drawn	1	
	(ii) $x = -1$ cao	1	
(d) 1.8 – 1.9 and -3.8 – 3.9	2 ft	B1 1.8 – 1.9 or -3.8 – -3.9	
11	(a) (i) 14.8 – 15.2	2	M1 7.4 – 7.6
	(ii) D correctly marked $133 - 37^\circ$ and 4.3 – 4.7 cm from A	2	B1 for correct bearing or distance.
	(b) (i) $3.24 (1) \times 10^5$	1	
(ii) C by 2.477×10^5 cao	3	SC2 for C by figs 2477 or figs 248 M1 324100 – 76400 or <i>their</i> (b) – 7.64×10^4	