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UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS

International General Certificate of Secondary Education

MARK SCHEME for the October/November 2006 question paper

0580, 0581 MATHEMATICS

0580/03, 0581/03 Paper 3 (Core), maximum raw mark 104

This mark scheme is published as an aid to teachers and students, 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.

All Examiners are instructed that alternative correct answers and unexpected approaches in candidates' scripts must be given marks that fairly reflect the relevant knowledge and skills demonstrated.

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

The grade thresholds for various grades are published in the report on the examination for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses.

• CIE will not enter into discussions or correspondence in connection with these mark schemes.

CIE is publishing the mark schemes for the October/November 2006 question papers for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level syllabuses and some Ordinary Level syllabuses.



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Page 2	Mark Scheme	Syllabus	F. Jan Jans
	IGCSE - OCT/NOV 2006	0580, 0581	3 PHYSOLINE

0	T A	B4 - 1	0	Tatal
Qu.	Answer	Marks	Comments	Total
1 (a) (i)	$\sqrt{35}$	1		
(ii)	3	1		
(iii)	45	1		
(iv)	2 or 3 or 37	1	accept any combination	
(v)	2	1		
(vi)	24	1		
(b) (i)	Correct arrangement of triangles drawn.	1	accept if only 1 internal line missing	
(ii)	16 25 36	2	1 mark for 2 correct	
(iii)	10000 or 1 x 10 ⁴	1	Not 100 ²	
(iv)	n^2 or $n \times n$	1	accept $t = n^2$ etc. do not accept x^2	
(v)	Square (numbers)	1	accept squares, squared	
\ - \ \ - \ \ - \ \ - \ \ \ \ \ \ \ \ \	, and the state of	-		12
2 (a)	-4 -4 -10	3	1 for each correct entry	. –
2 (a)	-4 -4 -10	P3ft	1 for each correct entry	
(b)	8 correctly plotted points, within $\frac{1}{2}$ square.	Ρ3π	P2 for 6 or 7 correct. ft	
	<u> </u>		P1 for 4 or 5 correct. ft	
	Smooth curve through 8 points	C1	Allow small errors in the points	
(.)	0.5.1	4	provided shape is maintained.	
(c)	x = 0.5 drawn.	1	must be from (0.5, –9) to curve at	
(-1)	0.04-0.4	4.64	least	
(d)	2.2 to 2.4	1ft	la altra de la constante de la	
(e)	<i>y</i> = 1 drawn.	1	must touch curve as min. length	
(f)	(x =) -0.7 to -0.5	1		
	(x =) 1.5 to 1.7	1		
				12
3 (a) (i)	128.571 or 128° 34′ ()	2	M1 for 180 – 360/7 oe	
(ii)	128.6	1 ft	Follow through their (a)(i).	
(b)(i)	x + 3y + 80 + 95 = 360 (or better)	1		
(ii)	x + 3y = 185 oe	1	Both marks may be gained in (b)(i)	
(iii)	40	2 ft	M1 for x correctly substituted into	
\			the linear equation.	
			Follow through their (b)(ii) provided	
			linear in x and y.	
(c) (i)	180° or angle sum of triangle mentioned	1	,	
(ii)	Angle in a semi-circle mentioned.	1		
(iii)	(a =) 70	1	SC1 for a = 20 b = 70	
	(b=)20	1 1	20 20 70	
(iv)	40	1ft	2 × their value for b provided	
"",	· -		0 < b < 55.	
			0	12
A (=\ (!\	Enlargement	D1		
4 (a) (i)	Enlargement	B1		
	(Scale Factor) 3	B1		
(**)	(Centre) (2, 4)	B1		
(ii)	Reflection	B1		
(1.) (2)	(in the line) $x = 4$	B1	004 (5.15.25.15.15.15.15.15.15.15.15.15.15.15.15.15	
(b)(i)	Correct translation drawn	2	SC1 for translation by the vector.	
			$\left(-3\right)\left(1\right)\left(2\right)\left(k\right)$	
			$\left \left(2 \right) \left(-1.5 \right) \left(k \right) \left(-3 \right) \right $	
/::\	Correct rotation drawn	2	SC1 for any 180° rotation.	
(ii)	Conect rotation drawn	4	SC1 for any 180 rotation. SC1 for 90° or 270° rotation about	
		+	(-1, -2)	9
				3

Page 3	Mark Scheme	Syllabus	- The Man
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Social 90					0/1
(b) 14.3 art 2 M1 for 10 x tan 550e (c) 18.5 to 18.6 3 M1 for 0.5 x 10 x their (b) or M1 18 - their (b) M1 1/2 x 10 x their (b) or M1 18 - their (b) M1 1/2 x 10 x their (b) M1 for √(18² + 10²) oe 9 M1 for √(18² + 10²) oe 10 M1 for √(18² + 10²)	5 (a)	90	2	M1 for 0.5 × 18 × 10	John
(c) 18.5 to 18.6 3	(b)	14.3 art	2		
M1 for Their (a) - (0.5 × 10 × their (b))			3	M1 for 0.5 × 10 × their (b) or M1 18 – their (b)	
Their (a) - (0.5 × 10 × their (b))				M1 $\frac{1}{2}$ x 10 x their BX	
(d) 20.6 art 2 M1 for √(18² + 10²) oe 9 6 (a) 750cao 3 M1 Figs 10 + figs 20 and figs 15 + figs 10. OR M1 Figs 10 x Figs 15 and Figs 20 x Figs 10 with dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 dep bricks in length x bricks in height. M1 for evidence display from height. M1 for evidence of size x frequency calculated for the sizes. M1 dep for sum of at least 5 ÷ 34 will for evidence of finding the middle shoe size. (Not just an answer of 5 or 6) will for evidence of finding the middle shoe size. (Not just an answer of 5 or 6) will for their 6 ÷ 34 × 100 or 17.65 will for their 6 ÷ 34 × 306 or 53 will for their 6 ÷ 34 × 306					
Section Sect				Their (a) $-(0.5 \times 10 \times \text{their (b)})$	
6 (a) 750cao 3 M1 Figs 10 ÷ figs 20 and figs 15 ÷ figs 10. OR M1 Figs 10 x Figs 15 and Figs 20 x Figs 10 with figs 15 and Figs 20 x Figs 10 with figs 15 and Figs 20 x Figs 10 with figs 15 and Figs 20 x Figs 10 with figs 15 and Figs 20 x Figs 10 with figs 16 with figs 16 with figs 16 with figs 16 with figs 15 with figs 16 with fig	(d)	20.6 art	2	M1 for $\sqrt{(18^2 + 10^2)}$ oe	
figs 15 + figs 10. OR M1 Figs 10 x					9
(b) (i) 756 2 M1 for 720 × 1.05 oe (ii) 8 1ft Their (b)(i) rounded up to the number of hundreds (c) (i) 10 1 (iii) 2 1ft Their cement buckets + 3.5 and rounded up to next whole number 9 7 (a) -1 2 SC1 for 1 SC1 for - \$\frac{k}{K}\$ (b) (m=) 2 (c=) 3 1 (c=) 3 1 (c) (i) Correct line drawn. 1 must cross both axes and line A (iii) y=2x-3 oe 2ft SC1 for m=2 or c=-3. Follow through their line for 2 and SC1. (iii) y=2x-3 oe 2ft SC1 for m=2 or c=-3. Follow through their line for 2 and SC1. (iii) 5.71 art 3 2 for 6 or 7 correct -1 if tally marks 1 for 4 or 5 correct (iii) 5.71 art 3 2 for 6 or 7 correct -1 if tally marks 1 for 4 or 5 correct (iii) 7 cao 1 1 (iii) 7 cao 1 (iii) 7 cao 1 (iii) 7 cao 1 (iii) 7 cao 1 (iii) 5.5 2 M1 for	6 (a)	750cao	3	figs 15 ÷ figs 10. OR M1 Figs 10 x Figs 15 and Figs 20 x Figs 10 M1 dep bricks in length × bricks in height. M1 dep. area of wall ÷ area of brick.	
(ii) 8 1ft neir (b)(i) rounded up to the number of hundreds (c) (i) 10 4 1 1 1 (iii) 2 1ft Their cement buckets + 3.5 and rounded up to next whole number 7 (a) −1 2 SC1 for 1 SC1 for − k/K (b) (m =) 2 (c =) 3 1 1 (c =) 3 1 (c =) 3 (c =	(b)(i)	756	2		
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$ \begin{array}{c ccccccccccccccccccccccccccccccccccc$					9
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through their line for 2 and SC1. Total		<u> </u>			
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(ii) 5.71 art 3 M1 for evidence of size x frequency calculated for the sizes. M1dep for sum of at least 5 ÷ 34 (iii) 7 cao 1 (iv) 5 cao 1 (v) 5.5 2 M1 for evidence of finding the middle shoe size. (Not just an answer of 5 or 6) (vi) 17.6 art 2ft M1 for their 6 ÷ 34 × 100 or 17.65 (vii) 54 or 53 2ft M1 for their 6 ÷ 34 × 306 or '53.8' or 53.9 (b) (i) 12 25 19 2 2 1 mark for 2 or 3 correct or all correct but not added (ii) 5 and 6 1ft Their class with the highest frequency. –1 for tally marks					7
Size x frequency calculated for the sizes. M1dep for sum of at least 5 ÷ 34	8 (a) (i)			1 for 4 or 5 correct	
(iv) 5 cao 1 (v) 5.5 2 M1 for evidence of finding the middle shoe size. (Not just an answer of 5 or 6) (vi) 17.6 art 2ft M1 for their 6 ÷ 34 × 100 or 17.65 (vii) 54 or 53 2ft M1 for their 6 ÷ 34 × 306 or '53.8'. or 53.9 (b) (i) 12 25 19 2 2 1 mark for 2 or 3 correct or all correct but not added (ii) 5 and 6 1ft Their class with the highest frequency1 for tally marks	(ii)	5.71 art	3	size x frequency calculated for the sizes.	
(v) 5.5 2 M1 for evidence of finding the middle shoe size. (Not just an answer of 5 or 6) (vi) 17.6 art 2ft M1 for their 6 ÷ 34 × 100 or 17.65 (vii) 54 or 53 2ft M1 for their 6 ÷ 34 × 306 or '53.8'. or 53.9 (b) (i) 12 25 19 2 2 1 mark for 2 or 3 correct or all correct but not added (ii) 5 and 6 1ft Their class with the highest frequency1 for tally marks					
middle shoe size. (Not just an answer of 5 or 6) (vi) 17.6 art 2ft M1 for their $6 \div 34 \times 100$ or 17.65 (vii) 54 or 53 2ft M1 for their $6 \div 34 \times 306$ or '53.8'. or 53.9 (b) (i) 12 25 19 2 2 1 mark for 2 or 3 correct or all correct but not added (ii) 5 and 6 1ft Their class with the highest frequency. -1 for tally marks					
(vii) 54 or 53 2ft M1 for their 6 ÷ 34 × 306 or '53.8'. or 53.9 (b) (i) 12 25 19 2 2 1 mark for 2 or 3 correct or all correct but not added (ii) 5 and 6 1ft Their class with the highest frequency. –1 for tally marks	(v)			middle shoe size. (Not just an	
(b) (i) 12 25 19 2 2 1 mark for 2 or 3 correct or all correct but not added (ii) 5 and 6 1ft Their class with the highest frequency1 for tally marks				M1 for their $6 \div 34 \times 100$ or 17.65	
(ii) 5 and 6 Correct but not added Their class with the highest frequency. –1 for tally marks	(vii)			'53.8'. or 53.9	
frequency. –1 for tally marks	(b) (i)			correct but not added	
	(ii)	5 and 6	1ft	•	
· · · · · · · · · · · · · · · · · · ·					17

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Page 4	Mark Scheme	Syllabus	F. July Marine
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2 ()			1446	304
9 (a)	Correct accurate drawing.	3	M1 for angle = 90° = BAC.	
	(lengths \pm 0.2 cm, angles \pm 1°)		M1 for AB = 7.5cm and	
			AC = 5.5 cm.	
			A1 for completed triangle.	
/b) /:)	2220 to 2250	26	(Dependent on at least one M)	
(b)(i)	233° to 235°	2ft	From their diagram.	
			M1 for their angle BCA measured	
(::)	400 to 400	04	correctly (± 1°)	
(ii)	182 to 190	2ft	Their BC × 20.	
			M1 for their BC (correct is 9.1 cm to	
/:::\	0 (4	9.5 cm)	
(iii)	2 (hours) 42 (mins)	4	SC3 for 2.7(0)	
			M1 for 20 × 1.85	
			M1 for 100 ÷ their 37	
			SC2 for 2 hr 7 mins with no	
			method.	
			B1 for their time correctly changed	
/:\	04		to hours and minutes.	
(iv)	24	2	M1 for 18 ÷ 0.75 oe	
(v)	Correct circle drawn	2	M1 for partial circle (crossing AB	
			and AC)	
(vi)	84 to 100	2ft	M1 for 4.2 to 5.0	
			Follow through their diagram,	
			dependent on intersections seen on	
			BC	47
				17

Total marks 104