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CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge Ordinary Level

MARK SCHEME for the October/November 2015 series

4024 MATHEMATICS (SYLLABUS D)

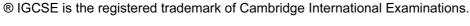
4024/11 Paper 1, maximum raw mark 80

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 2015 series for most Cambridge IGCSE[®], Cambridge International A and AS Level components and some Cambridge O Level components.





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Question	Answers	Mark	Par	rt marks	OUD, COM
1 (a)	19	1			7

Qu	estion	Answers	Mark	Part marks
1	(a)	19	1	
	(b)	$\frac{8}{45}$ oe	1	
2	(a)	8	1	
	(b)	48; or FT $6 \times their(a)$	1 √	
3	(a)	700	1	
	(b)	147; or 3×7^2	1	
4	(a)	320	1	
	(b)	150	1	
5		4	2 *	M1 for $(\sqrt{50})^2 - (\sqrt{34})^2$
6	(a)	30 700	1	
	(b)	(0).538	1	
7		(0).28 oe	2 *	B1 for (0).4 oe seen
8	(a)	123	1	
	(b)	7 WWW	2 *	M1 for $5a - 2 = 33$ oe
9	(a)	11	1	
	(b)	x^2	1	
	(c)	8	1	
10	(a)	-8 and 2	1	
	(b)	-3	1	
	(c)	-2, 0, 2 all three	1	
11	(a)	(0).75	1	
	(b)	4.65	2 *	M1 for 5.5 – (0).85
12	(a)	4 WWW	2 *	M1 for (3.8 × 5) soi by 19
	(b)	3	1	

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13	(a)		3	1	
	(b)		2.08; or $2\frac{8}{100}$, or better and isw	2 *	M1 for numerical $\frac{\sum fx}{50}$
14	(a)		$(\pm)\frac{1}{3}$	1 *	
	(b)		999	1	
	(c)		4	1	
15			$\frac{17}{16d-c}$	3 *	M1 for squaring <i>both</i> sides M1 (indep.) for collecting <i>both their x</i> terms onto one side and the numerical terms onto the other side
16	(a)		7.53×10^{-5}	1	
	(b)		6.045×10^{24}	2	C1 for figs. $6.0(4)5$ or for $A \times 10^{24}$ where $1 < A < 10$
17			1 or 5 WWW	3 *	Either M1 for $5 + (3 - t)^2 = 9$ and M1 for $t^2 - 6t + 5 = 0$; or M1 for $(3 - t)^2 = 4$ and M1 for $3 - t = \pm 2$
18	(a)		21	1	
	(b)		5 <i>p</i> + 1 oe	2	C1 for $5p + c$; or for $kp + 1$ ($k \neq 0$)
19	(a)		295°	1	
	(b)		Perpendicular bisectors of AB and BC with region around B shaded	2 *	B1 for either perpendicular bisector correct
20	(a)	(i)	20	1	
		(ii)	40	1	
	(b)		300 WWW; or FT 5 × {their(i) + their (ii)}	2 * √	M1 for $\frac{1}{2} \times (their\ 20 + their\ 40) \times 10$ oe
21	(a)		Pie chart completed accurately, and labelled with Bananas and Oranges	2 *	M1 for 4 × 18 (= 72) oe or for 4 × 32 (= 128) oe
	(b)		20	2 *	M1 for $\frac{72-60}{60} \times 100$ oe

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22	(a)	16 - 9x	1	
	(b)	$\frac{x+5}{3x-1}$	3 *	B1 for $(3x+1)(x+5)$ oe B1 for $(3x+1)(3x-1)$ oe
23	(a)	15a + 12c = 324 seen	1	
	(b)	Correctly equating one set of coefficients	M1	
		Correct method to eliminate one variable	M1	
		Either $a = 16$ or $c = 7$ WWW	A1	If A0 , then C1 for a pair of values that satisfy either original equation.
		Both $a = 16$ and $c = 7$ WWW	A1	satisfy Citiler original equation.
	(c)	99; or FT $(4 \times their \ a + 5 \times their \ c)$ provided both a and c are positive	1 √^	
24	(a)	112°	2 *	B1 for $P\hat{R}Q = 31^{\circ}$; or for $P\hat{R}S = 68^{\circ}$; or for $P\hat{T}S = 180^{\circ} - their P\hat{R}S$
	(b) (i)	37.5° WWW	2 *	M1 for $E\hat{O}D$, or other angle at the centre, $= \frac{360-60}{4} (= 75^{\circ})$
	(ii)	12.56	2 *	M1 for $\frac{60}{360} \times 2 \times 3.14 \times 12$ or better
25	(a)	Two corresponding pairs of angles equated, with reasons, from $B\hat{A}E = F\hat{C}B$ opp. angles of a parm. $A\hat{B}E = C\hat{F}B$ alternate angles $A\hat{E}B = C\hat{B}F$ alternate angles	2*	B1 for any one pair, with correct reason
	(b)	7.5 oe	2 *	M1 for $\frac{BC}{5} = \frac{6}{4}$ oe
	(c)	12 <i>x</i>	2 *	B1 for seeing $4x$ or $9x$ as $\triangle ABE$ or $\triangle BCF$ respectively