

MARK SCHEME for the May/June 2014 series

4024 MATHEMATICS (SYLLABUS D)

4024/11

Paper 1, maximum raw mark 80

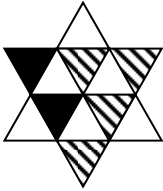
This mark scheme is published as an aid to teachers and candidates, to indicate the requirements of the examination. It shows the basis on which Examiners were instructed to award marks. It does not indicate the details of the discussions that took place at an Examiners' meeting before marking began, 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 May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

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Question	Answers	Mark	Part Marks
1 (a)	correct shape	1	
(b)		1	
2 (a)	5.3	1	
(b)	90	1	
3 (a)	29.2	1	
(b)	38.7	1	
4	obtuse angled	2	M1 for $5^2 + 7^2 (= 74)$
5 (a)	≥ 5 oe	1	
(b)	-2, -1, 0, 1	1	
6 (a)	45 ($^\circ$)	1	
(b)	27	1	
7	$a = 10.05$ $b = 14 / 3$ oe	2	B1 for either or M1 for $\frac{280}{360} \times 2\pi \times 3$
8 (a)	8	2	M1 for two of 30, 50, 0.5, 20 seen
(b)	(0).32	1	
9	$\frac{3y+4}{y+1}$	3	M1 for $y(3-a) = a-4$ soi and a further M1 for $3y+4 = a+ay$ soi
10 (a)	-4	1	
(b) (i)	[0]8 18	1	
(ii)	33	1	
11 (a)	180 [$^\circ$]	1	
(b)	220 [$^\circ$]	1	
(c)	285 [$^\circ$] cao	1	

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12	(a)	$4n + 3$ oe	1	B1 for either	
	(b)	$\frac{5}{29}$	2		
13	(a)	3	1		
	(b)	(i)	x^5		1
		(ii)	$\frac{2}{3a}$		1
14	(a)	(i)	15	1	
		(ii)	12	1	
	(b)	Column, F.D. 1.2 width 50 to 65	1		
15	(a)	10 etc.	1		
	(b)	0	1		
	(c)	$\sqrt{50}$ etc.	1		
16	(a)	$38 [^\circ]$	1		
	(b)	$57 [^\circ]$	1		
	(c)	$85 [^\circ]$	1 ft		
17	(a)	(i)	$8t + 17$	1	
		(ii)	$2p + 13q$	1	
	(b)	$5x^2y(5xy - 3)$	1		
18	(a)	[0].12	1	M2 for the difference between $\frac{1}{2}60 \times 8$ and $[\frac{1}{2}30 \times 6 + 20 \times 6 + \frac{1}{2}10(6 + 7.2)]$ oe or M1 for using area under graph.	
	(b)	Blue 36	3		
19	(a)	2×10^{-5}	2	B1 for 2000×10^{-8} or M1 for figs $\frac{6}{3}$ soi	
	(b)	2.99×10^{-23}	2	B1 for figs 299 or better	

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20	(a)	$\begin{matrix} 7 \\ -9 \end{matrix}$	2	B1 for either or M1 for using $x^2 - 2ax + a^2 + b$ or $(x - 7)^2 + k$ seen.
	(b)	$\frac{2}{3} \quad -3$	2	M1 for framework $(3x + h)(x + k)$ seen.
21	(a) (i)	$(0, 3)$ $(2, 0)$	2	B1 for either or M1 for substituting 0 for either x or y
	(ii)	$-\frac{3}{2}$ oe	1	
	(b)	$(-1, 9)$	1	
22	(a)	Correct triangle	1	
	(b) (i)	Perpendicular bisector of AC	1	
	(ii)	Arc centre A radius 4 cm	1	
	(c)	Correct region shaded	1	
23	(a)	17	2	M1 for $(1 : 3)^2$ soi
	(b)	$\frac{72}{125}$ oe	3	M1 for $y = \frac{k}{x^3}$ and A1 for $k = 72$
24	(a)	$\frac{3}{9}, \frac{6}{9}, \frac{4}{9}, \frac{5}{9}$ oe	2	B1 for three correct
	(b) (i)	$\frac{12}{90}$ oe	1FT	FT from <i>their</i> tree diagram
	(ii)	$\frac{48}{90}$ oe	2FT	FT from <i>their</i> tree diagram B1 for $\frac{24}{90}$ oe FT seen or M1 for $\frac{4}{10} \times \frac{6}{9} + \frac{6}{10} \times \frac{4}{9}$ oe FT
25	(a)	$\begin{pmatrix} 4 & -6 \\ -6 & 14 \end{pmatrix}$	2	B1 for three elements correct.
	(b)	$\begin{pmatrix} 11 & -7 \\ -14 & 18 \end{pmatrix}$	2	B1 for three elements correct

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(c)	$\frac{1}{10} \begin{pmatrix} 4 & 1 \\ 2 & 3 \end{pmatrix}$	2	B1 for (det A =) 10 seen or implied or For $\begin{pmatrix} 4 & 1 \\ 2 & 3 \end{pmatrix}$ seen or M1 for $4 \times 3 - (-2 \times -1)$
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