

**MARK SCHEME for the October/November 2013 series**

**4024 MATHEMATICS (SYLLABUS D)**

**4021/11**

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 2013 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

Page 2	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2013	4024	11

Question	Answers	Mark	Part marks
1	(a) $\frac{15}{16}$ oe	1	
	(b) 9 cao	1	
2	(a) 0.024	1	
	(b) 0.2 22% $\frac{2}{9}$	1	
3	(a) 2 : 9	1	
	(b) 4.8 (0) oe in dollars and/or cents	1	
4	Two numbers between 2 and $2\frac{1}{3}$	2	<b>C1</b> for one correct number. or <b>B1</b> for $3x < 7$ , or for $x < \frac{7}{3}$ , or for $x < 2\frac{1}{3}$ or $\frac{3x}{3} < \frac{7}{3}$
5	(a) $4d + 20$ oe	1	
	(b) $(d - 5)^2$ oe	1	
6	(a) 135	1	
	(b) $1.2 \times 10^6$	1	
7	20	2	Dep. on <b>three</b> correct approximations seen.  <b>B1</b> for $\sqrt{8.8536} \approx 3$ or ((38.982 $\approx$ 39 or 40) and 6.0122 $\approx$ 6 or 6.0)
8	(a) $\frac{4}{9}$ cao	1	
	(b) $\frac{4}{81}$ cao	1	
9	(a) 20	1	
	(b) 10	2	<b>M1</b> for $60 \times \frac{20}{120}$ oe

Page 3	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2013	4024	11

10	(a)	210°	1	
	(b)	330°	1	
	(c)	43	1	
11	(a)	3.75, or $3\frac{3}{4}$ , only	1	
	(b)	320	2	<b>C1</b> for figs 32 or <b>M1</b> for $5 \times 40 \times 40 \times 40$ or $5 \times 40^3$
12	(a)	All of 4, 5, 6, 6, 4	2	<b>C1</b> for 3 or 4 correct values
	(b)	$\frac{18}{43}$ cao	1	
13	(a)	$-\frac{5}{8}$ , or $-0.625$ , only	1	
	(b)	$\frac{7}{2x+3}$ oe	2	<b>B1</b> for $2x$ “y” + $3x = 7$ oe (condone swaps of $x$ and “y”) – both variables on the same side.
14	(a)	$(A \cup B) \cap C$	1	
	(b)	(i)	6	1
		(ii)	d, e, f	1
15	(a)	0, or none	1	
	(b)	40	1	
	(c)	147	1	
16	(a)	(i)	5	1
		(ii)	3	1
	(b)	13	1	
17	(a)	$y > 4$ oe $y < 4x$ oe	1 1	If 0 scored, then <b>B1</b> for $y \dots 4x$ , oe, and $y \dots 4$ , oe, with incorrect inequalities for ...
	(b)	3	1	

Page 4	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2013	4024	11

18	76 WWW	3	<p><b>M2</b> for a completely correct method to find an equation for <math>x</math>.</p> <p>or <b>M1</b> for <math>66 + 70 + 120 + 90 + 90 + y = 180k</math> where <math>k &gt; 2</math>, <math>k \neq 4</math> and <math>x = 360 - y</math>.</p> <p>or <b>B2</b> for 284 WWW for the missing <b>interior</b> angle.</p> <p>or <b>B1</b> for <math>(6 - 2) \times 180</math> or 720 (if as angle sum of the hexagon) used.</p>
19	$8\pi x^3$	3	<p><b>C2</b> for a correct, unsimplified answer.</p> <p>or</p> <p><b>B1</b> for <math>\frac{1}{3}\pi \times (2x)^2 \times 7x</math>,</p> <p>or for <math>\frac{28}{3}\pi x^3</math> seen</p> <p>and <b>B1</b> for, <math>\frac{1}{3}\pi \times x^2 \times 4x</math>,</p> <p>or for <math>\frac{4}{3}\pi x^3</math> seen</p>
20	<p>(a) <math>\frac{6}{35}</math></p> <p>(b) 0</p> <p>(c) <math>\frac{17}{35}</math></p>	<p>1</p> <p>1</p> <p>2</p>	<p><b>C1</b> for <math>\frac{8}{35}</math>, or for <math>\frac{13}{35}</math></p> <p>or <b>B1</b> for <math>\frac{17}{\text{their}(5 \times 7)}</math></p>
21	<p>(a) (i) <math>4q - 2p</math>, or <math>-2p + 4q</math>, only</p> <p>(ii) <math>5q</math> ft <i>their</i> (i) + <math>2p + q</math>, simplified</p> <p>(b) <math>kp + \text{their}</math> (ii)</p> <p>(c) 10</p>	<p>1</p> <p>1✓</p> <p>1✓</p> <p>1</p>	<p>In (a), award <b>C1</b> if <b>both</b> answers are correct, but not in their simplest form.</p>
22	<p>(a) <math>54^\circ</math></p> <p>(b) <math>36^\circ</math></p> <p>(c) <math>61^\circ</math></p> <p>(d) <math>25^\circ</math></p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p>	

Page 5	Mark Scheme	Syllabus	Paper
	GCE O LEVEL – October/November 2013	4024	11

23	(a)	$(-)\frac{1}{5}$ , or $(-)\ 0.2$ , only	1	<b>C1</b> for 5. or <b>M1</b> for trap. = $\frac{1}{2} \times 10 \times (6 + u) = 85$ oe or <b>M1</b> for $\frac{1}{2} \times 10 \times (u - 6) = 85 - 6 \times 10$ oe
	(b)	4	1	
	(c)	11	2	
24	(a)	$A + B = 5$ correctly obtained from $15 = 10 + A + B$	1	<b>C1</b> if one correct
		$4A + B = 2$ correctly obtained from $11 = 10 + 2A + \frac{B}{2}$	1	
	(b)	both $A = -1$ and $B = 6$	2	
	(c)	9 cao	1	
25	(a)	Reflection $x = -1$ oe indep	1 1	indep. – but lost if more than one transf. named.  <b>C1</b> for 2 correct vertices, or for a triangle with vertices $(0, 2)$ , $(1, 3)$ , $(2, 3)$ .
	(b)	Triangle with vertices $(0, 6)$ , $(-1, 5)$ , $(-2, 5)$	2	
	(c)	4	1	
26	(a)	$\begin{pmatrix} 1 & 3 \\ 0 & -2 \end{pmatrix}$	2	<b>C1</b> for 2 or 3 correct elements  <b>C1</b> for 2 or 3 correct elements
	(b)	$\begin{pmatrix} 1 & -18 \\ 6 & 13 \end{pmatrix}$	2	
	(c)	$\begin{pmatrix} 3 & 0 \\ 0 & 3 \end{pmatrix}$ oe	1	