



**Cambridge Assessment International Education**  
Cambridge Ordinary Level

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**MATHEMATICS (SYLLABUS D)**

**4024/11**

Paper 1

**October/November 2017**

MARK SCHEME

Maximum Mark: 80

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**Published**

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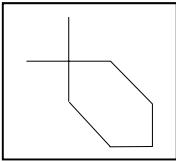
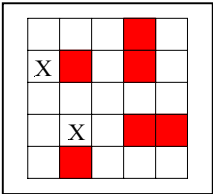
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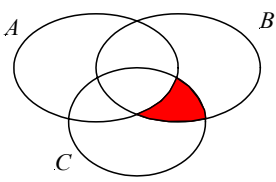
**Abbreviations**

- cao correct answer only
- dep dependent
- FT follow through after error
- isw ignore subsequent working
- oe or equivalent
- SC Special Case
- nfwf not from wrong working
- soi seen or implied

Question	Answer	Marks	Partial Marks
1(a)	$\frac{17}{24}$	1	
1(b)	0.52	1	
2(a)	80	1	
2(b)	$(\pm)\frac{1}{3}$	1	
3(a)	24	1	
3(b)	120	1	
4	Initial statement containing 1000 and 0.02	M1	If M0, award C1 for 50 000 nfwf.
	50 000	A1	
5(a)		1	
5(b)		1	
6	11	2	M1 for $1\frac{1}{2} \times 10 + 7$
7(a)	16.6	1	
7(b)	$\frac{x-7}{3}$ oe	1	

Question	Answer	Marks	Partial Marks
8	80	2	<b>B1</b> for “ $k$ ” = $\frac{4}{5}$ if $y = “k” \times x^2$ used or <b>M1</b> for $\frac{\frac{1}{5}}{(\frac{1}{2})^2} = \frac{y}{10^2}$ oe or FT <b>M1</b> for $y = (their\ k) \times 100$ when $y = “k” \times x^2$ used
9(a)	$x > 4$	1	
9(b)	-3 and -2	1	
10(a)	-2	1	
10(b)	-1	1	
10(c)	0	1	
11(a)	$1.2 \times 10^{-4}$	1	
11(b)	$5.29 \times 10^7$	2	<b>C1</b> for figs. 529; or for $5.3 \times 10^7$ or <b>B1</b> for $55 \times 10^6$ ; or for $0.21 \times 10^7$ ; or for figs 529
12	Correct method to eliminate one variable	<b>M1</b>	Either equating one set of coefficients, or equating expressions in either $[m]x$ or in $[m]y$ , or substituting for $x$ or for $y$ .
	Both $x = -2$ and $y = 5$ nfw. .	<b>A2</b>	<b>A1</b> for either $x = -2$ or $y = 5$ nfw. . After A0, <b>C1</b> for a pair of values that satisfies either original equation.
13(a)	Correct line	1	
13(b)	$\frac{7}{15}$ cao	1	
13(c)	240	1	
14(a)	0.106	1	
14(b)	5.678 to 5.68[0]	1	
14(c)	3180	1	
15(a)	$5 - 6t$	1	
15(b)	$\frac{4x^2}{3y}$ or $\frac{4x^2y^{-1}}{3}$	2	<b>C1</b> for two of $\frac{4}{3}$ , $x^2$ , denominator $y$ (or $y^{-1}$ in numerator) correct. or <b>B1</b> for $8x^6y^3$

Question	Answer	Marks	Partial Marks
16(a)	( 5, 3 )	1	
16(b)	164 nfw	2	<b>M1</b> for $[0 - 10]^2 + [7 - (-1)]^2$ or for $[10 - 0]^2 + [-1 - 7]^2$
17(a)	Correct curve from (4, 77) to (6, 90) via (5, 87)	1	
17(b)(i)	2.8	1	
17(b)(ii)	67 or 68	1	
18(a)	14	1	
18(b)	36	1	
18(c)	72 nfw; or FT 90 – their(b)/2 nfw	2	<b>B1</b> for angle $OB2 = 18^\circ$ , where $B$ is the bottom point. or <b>M1</b> for correct angle clearly identified.
19(a)	$5a ( 5a - 1 )$	1	
19(b)	$( 3b - 4 )( 3b + 4 )$	1	
19(c)	$( 2x + 3 )( 2y + t )$	2	<b>B1</b> for one of the partial factorisations: $2y(2x + 3)$ ; $t(2x + 3)$ ; $2x(2y + t)$ ; $3(2y + t)$
20(a)	Acceptable quadrilateral with visible arcs	1	
20(b)(i)	Acceptable bisector of angle $ABC$	1	
20(b)(ii)	Acceptable perpendicular bisector of $BC$	1	
20(c)	Acceptable $PQ$ – dep. on correct types of loci in (b).	1	
21(a)	( 18, 6 )	1	
21(b)	Both $y > 6$ and $y < \frac{x}{3}$	1	
21(c)	$h = 22$ and $k = 7$	2	<b>C1</b> for one correct
22(a)	$\frac{v}{10}$ oe	1	
22(b)	20 nfw	3	<b>M1</b> for $\frac{1}{2} \times (40 + 80) \times v$ oe or <b>B1</b> for two of $15v$ , $40v$ , $5v$ . <b>M1</b> for their $60v = \text{their}(1200)$

Question	Answer	Marks	Partial Marks
23(a)		1	
23(b)(i)	4	1	
23(b)(ii)	$\frac{1}{-1}, \frac{1}{1}, \frac{1}{2}, \frac{4}{-1}, \frac{4}{1}, \frac{4}{2}$ oe and isw	2	C1 for 4 or 5 correct members
24(a)	$6a + 2b$ oe	1	
24(b)(i)	3	1	
24(b)(ii)(a)	$3b$ ; or FT $kb$	1	
24(b)(ii)(b)	$-3a$	1	
25(a)	11, 36	1	
25(b)(i)	$2N + 1$	1	
25(b)(ii)	$(N + 1)^2$ oe	1	
25(c)	169	2	B1 for their <b>(b)(i)</b> = 25; or for $N = 12$
26(a)	$\begin{pmatrix} -6 & -6 \\ 3 & 3 \end{pmatrix}$ oe	2	C1 for 2 or 3 correct elements; or for 3 or 4 correct elements of $\begin{pmatrix} 6 & 2 \\ -1 & 3 \end{pmatrix}$ or B1 for the correct matrix in the Wkg. and simplified, incorrectly, to give the response in the Ans.Space.
26(b)	$\begin{pmatrix} -2 & -6 \\ 3 & 7 \end{pmatrix}$	2	C1 for 2 or 3 correct elements
26(c)	$\frac{1}{2}$ ; or 0.5 ; only	1	