Cambridge O Level

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Cambridge Ordinary Level

MATHEMATICS (SYLLABUS D) **4024/11**

Paper 1 **May/June 2016**

MARK SCHEME

Maximum Mark: 80

Published

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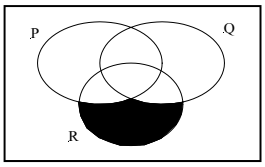
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Question	Answers	Mark	Part marks
1 (a)	14	1	
(b)	(0).45(0)	1	
2 (a)	$\frac{1}{24}$ oe	1	
(b)	$\frac{3}{7}$ cao	1	
3 (a)	02 25	1	
(b)	3150	1	
4	530	2 *	**B1** for (1800 and 1270); or for 370 or 530 seen
5	88	2 *	**M1** for $(4 \times 80 + 120)$, or better.
6 (a)	3.4×10^{-5}	1	
(b)	0.42×10^{-5} 33.7×10^{-6} 0.034×10^{-3}	1	Accept *correct* equivs.
7	30; 8; 0.4 all three	**M1***	**B1** for two of 30; 8; 0.4
	600	**A1**	Ans. 600 ww, award **C1**
8 (a)	Acceptable kite	1	
(b)	Acceptable parallelogram	1	
9	$y \leqslant 3$ oe $y \geqslant -x$ oe	1 1	**C1** for y ... 3 oe and y ... $-x$ oe, where '...' is the wrong inequality or =
10	$(x - 4)(3y + 5)$	2 *	**B1** for $5(x - 4)$, or $3y(x - 4)$, or $x(3y + 5)$, or $4(3y + 5)$.
11 (a)	$-10\frac{1}{2}$ oe	1	
(b)	6	2 *	**B1** for $3 = 2$ 'x' $- 9$ or for $\frac{x+9}{2}$ or $\frac{y+9}{2}$
12 (a)	3.6 oe	1	
(b)	25	1	
(c)	1:250 000	1	

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Question	Answers	Mark	Part marks
13	A correct method to eliminate one variable. Both $x = -2$ and $y = -1.5$ www;	* **M1** **A2**	 Or **A1** for one correct or ft their value of x or y correctly evaluated in one equation For y, accept –1.5, or $-1\frac{1}{2}$, or $-\frac{3}{2}$, only. If [0] earned, then **C1** for a pair of values that satisfy either equation
14	Vol. of hemisphere = $\frac{2}{3}\times\pi\times3^3$ oe or 18π Vol. of cone = $\frac{1}{3}\times\pi\times3^2\times2$ or 6π $k = 12$	**M1*** **M1*** **A1**	
15 (a)	4.5 oe	2 *	**M1** for $8 = k4^2$ oe or $8 \div 4^2 = y \div 3^2$ oe
(b)	7.5 or any equiv.	1	
16 (a)	10°	1	
(b)	20°	1	
(c)	60°	1	
17 (a)	10, 12	1	
(b)	$2n + 2$	1	
(c)	99	2 *	**M1** for *their* (b) = 200
18 (a)	Vertical axis label should be 'Frequency density' or heights should be 3, 8, 10, 2.	1	
(b)	Rectangles with same bases as in (a), with heights 3, 8, 10, 2. Vertical label 'Frequency density' and a suitable scale.	3 *	**C2** for 4 bars correct, with no label or incorrect scale on vertical axis or for 3 bars correct with 'Frequency density' label and numbered linear scale. **C1** for numbers 3, 8, 10, 2; or 'Frequency density' label or for 3 bars correct
19 (a)	40°	1	
(b)	140°	1	

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Question	Answers	Mark	Part marks
(c)	50°	1	
(d)	40°	1	
20 (a)	0	1	
(b)	1	1	
(c)	1.6 oe	2*	**M1** for $(11 \times 1 + 9 \times 2 + 7 \times 3 + 6 \times 4 + 1 \times 6)/50$
21 (a)	$2^2 \times 5^3$	1	
(b) (i)	$p = 5$ and $q = 4$	1	
(ii)	$p = -3$ and $q = 0$	1	
(iii)	$p = 8$ and $q = 4$	1	
22 (a)	101° to 103°	1	
(b) (i)	Circular arc, centre B, radius 4 cm.	1	
(ii)	Line parallel to AC, 2 cm away.	1	
(c)	AP = 6.2 to 6.6 cm	1	
23 (a)		1	
(b) (i)	24	1	
(ii)	8	1	
(iii)	22 or 26 or 30	1	
24 (a) (i)	$\frac{20}{T}$ oe	1	
(ii)	5	1	
(b) (i)	15	1	
(ii)	Curve, concave down, from (0, 0) to (T, 150)	1	
25 (a) (i)	$\mathbf{p} - \mathbf{q}$	1	
(ii)	$3\mathbf{p} - 4\mathbf{q}$	1	

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Question	Answers	Mark	Part marks
(iii)	$9\mathbf{p} - 9\mathbf{q}$	2 *	**B1** ft for a correct unsimplified form seen or correct route seen
(b)	1:8	1	
26 (a) (i)	0	1	
(ii)	$\frac{3}{7}$	1	
(b)	$\frac{2}{7}$ oe	1	
(c)	$\frac{11}{14}$ oe	2*	**M1** for $\frac{1}{2}\times 1 + \frac{1}{2}\times\frac{4}{7}$

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