



---

**MATHEMATICS (SYLLABUS D)**

**4024/11**

Paper 1

**May/June 2017**

MARK SCHEME

Maximum Mark: 80

---

**Published**

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 2017 series for most Cambridge IGCSE<sup>®</sup>, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

---

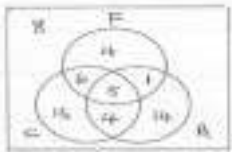
© IGCSE is a registered trademark.

This document consists of **6** printed pages.

Question	Answer	Marks	Part Marks
1(a)	(0).016 oe	1	
1(b)	$2 \times (3 + 4) \times 5$ cao	1	
2(a)	22	1	
2(b)	Any trapezium of area 18 with height 4 cm and other parallel side 3 cm long	1	
3	20	2	<b>B1</b> for 135 seen or $\angle BDC = 25$ or $\angle DAE = 45$ or $\angle DEA = 45$
4(a)	$2 \times 2 \times 3 \times 3$ oe	1	
4(b)	2,13	1	In either order
5	$t + 3t = 140$ or $4t = 140$	<b>B1</b>	
	$[t] = 35$	<b>B1</b>	
6(a)	kite	1	
6(b)	parallelogram	1	
7	77	2	<b>B1</b> for 66 or 37 or 24 or 53 seen
8(a)	1400	1	
8(b)	12.25	1	
9(a)	16	1	
9(b)	80	2	<b>B1</b> for 120 or 96 seen or <b>M1</b> for $\frac{24}{40+x} = \frac{1}{5}$ or $\frac{16+x}{40+x} = \frac{4}{5}$ oe

Question	Answer	Marks	Part Marks
10(a)(i)	248.37	1	
10(a)(ii)	250	1	
10(b)	6	1	
11	Correct method to eliminate one variable reaching $ax = b$ or $cy = d$	<b>M1</b>	
	$x = -2$ $y = 3$	<b>A2</b>	A1 for either $x = -2$ or $y = 3$ Or after A0, C1 for a pair of values which satisfy either equation or for correct answers with no working
12(a)(i)	5	1	
12(a)(ii)	16	1	
12(b)	Histogram completed correctly	1	Column 20-30, height 1.4
13(a)	$\frac{19}{40}$	1	
13(b)	$\frac{14}{15}$	1	
13(c)	$\frac{31}{48}$ oe	1	Must be integers
14(a)	$1.86 \times 10^{-4}$	1	
14(b)(i)	$6.4 \times 10^{17}$	1	
14(b)(ii)	$7.87 \times 10^8$	2	B1 for figs 787 seen

Question	Answer	Marks	Part Marks
15(a)	1080	1	
15(b)(i)	$\frac{1}{27}$ oe	1	
15(b)(ii)	1040	2	M1 for <i>their</i> $1080 \times \text{their } \frac{1}{27}$ or 40
16(a)(i)	13	1	
16(a)(ii)	58	1	
16(b)	$[r] = [\pm] \sqrt{\frac{A-5}{2}}$	2	M1 for $r^2 = \frac{A-5}{2}$ or $\sqrt{(2r^2)} = \sqrt{(A-5)}$
17(a)	B drawn with vertices (2,-3) (3,-3) (3,-5)	1	
17(b)(i)	C drawn with vertices (4,1) (6,1) (6,3)	2	B1 for correct size triangle drawn but in wrong position or B1 for C drawn using stretch, sf 2 with $x$ -axis invariant, vertices (2,2) (3,2) (3,6)
17(b)(ii)	$\begin{pmatrix} 2 & 0 \\ 0 & 1 \end{pmatrix}$	1	
18(a)(i)	$\frac{1}{9}$	1	
18(a)(ii)	25	1	
18(b)	$\frac{b^2}{3a}$	2	B1 for $b^2$ or $3a$ in final answer or M1 for $\frac{b^4}{9a^2}$

Question	Answer	Marks	Part Marks
19(a)	430	1	
19(b)	300	1	
19(c)	12	2	M1 for $\frac{2.4 \times 20}{4}$
20(a)	11	1	
20(b)	30	1	
20(c)(i)	line joining (1125, 25) to (1155, 0)	1	
20(c)(ii)	1136 – 1137	1	Ft their line with negative gradient
21(a)(i)	Correct Venn diagram 	2	B1 if 1 or 2 errors in the numbers
21(a)(ii)	55	1	
21(b)(i)	40	1	
21(b)(ii)	39	1	

Question	Answer	Marks	Part Marks
22(a)	$(3\frac{1}{2}, 3\frac{1}{2})$	1	
22(b)	$(-1, 4)$	1	
22(c)	$(1, 0)$	1	
22(d)	$y = \frac{1}{3}x + \frac{7}{3}$ oe	2	<b>B1</b> for $y = \frac{1}{3}x [+ c]$ or $y = mx + \frac{7}{3}$ or $\frac{1}{3}x + \frac{7}{3}$
23(a)(i)	$\mathbf{q - p}$	1	
23(a)(ii)	$\mathbf{p - \frac{3}{4}q}$ or $\frac{4\mathbf{p} - 3\mathbf{q}}{4}$	1	
23(b)(i)	$\overline{PT} = \frac{1}{3}\mathbf{P}$	2	M1 for $\overline{PT} = \overline{PS} + \frac{1}{3}\overline{QS}$ soi or $\overline{PT} = PQ + QT$ soi
23(b)(ii)	O, P and T are collinear oe	1	e.g. T is on OP produced
24(a)	23	2	M1 for $6x - 18$ or $5x + 5$
24(b)(i)	-8	1	
24(b)(ii)	-1 or 7 with correct working	3	M1 $(m - 3)^2$ correctly expanded to $m^2 - 6m + 9$ or $(m - 3)^2 + 1 = 17$ <b>and</b> M1 for $m^2 - 6m - 7 = 0$ or $(m - 3) = \pm 4$ or SC1 for $m = -1$ or 7 with no working