Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

MATHEMATICS **0580/11**

Paper 1 (Core) **May/June 2017**

MARK SCHEME

Maximum Mark:56

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.

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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
nfww	not from wrong working
soi	seen or implied

Question	Answer	Marks	Part marks
1	70 020 cao	**1**	
2	[0].008	**1**	
3	2	**1**	
4	x^{10}	**1**	
5	Congruent	**1**	
6	31 or 37	**1**	
7(a)	23.46 cao	**1**	
7(b)	20 cao	**1**	
8	$4n(3n - m)$ final answer	**2**	**B1** for $4(3n^2 - mn)$ or $n(12n - 4m)$ or $2n(6n - 2m)$ or $2(6n^2 - 2mn)$
9	6	**2**	**B1** for answer 2 or 3 or 2×3 or **M1** for prime factors of 126 **and** 150 seen
10(a)	Chicago	**1**	
10(b)	−3	**1**	
11	$21y + xy$ or $y(21 + x)$ final answer	**2**	**B1** for $14x + 21y$ or $-14x + xy$ or answer of $ky + xy$
12	3567.5	**1**	
	3572.5	**1**	**SC1** for both correct but reversed
13	$\begin{pmatrix}-1\\-9\end{pmatrix}$	**2**	**B1** for $\begin{pmatrix}-6\\-8\end{pmatrix}$ seen or answer $\begin{pmatrix}k\\-9\end{pmatrix}$ or $\begin{pmatrix}-1\\k\end{pmatrix}$
14	14.88	**2**	**M1** for $5000 \div 336$ or **B1** for 14.881 or 14.880[9...] or 14.9

Question	Answer	Marks	Part marks
15(a)	$\frac{21}{50}$ oe	**1**	
15(b)	315	**1FT**	**FT** *their* **(a)** × 750 provided 0 < *their* **(a)** < 1
16	$\frac{2}{9}$	**2**	**B1** for $\frac{8}{36}$ or $\frac{4}{18}$
17	$\sqrt{\frac{A}{4\pi}}$ or $\frac{1}{2}\sqrt{\frac{A}{\pi}}$ oe	**2**	**M1** for $r^2 = \frac{A}{4\pi}$ or $2r\sqrt{\pi} = \sqrt{A}$ or $4r^2 = \frac{A}{\pi}$ or $\pi r^2 = \frac{A}{4}$
18(a)	–5	**1**	
18(b)(i)	3 × **(**5 + 2**)** + 2 = 23	**1**	
18(b)(ii)	12 ÷ **(**4 + 2**)** = 2	**1**	
19	$\frac{14(\text{or}\,35)}{21} + \frac{15}{21}$	**M1**	accept $\frac{14k(\text{or}\,35k)}{21k} + \frac{15k}{21k}$
	$2\frac{8}{21}$ cao	**A2**	or **A1** for $\frac{50}{21}$ or $1\frac{8}{21}$ or $\frac{29}{21}$ or $1\frac{29}{21}$
20	Correctly eliminating one variable	**M1**	
	[*x* =] 2	**A1**	
	[*y* =] −7	**A1**	If zero scored, **SC1** for 2 values satisfying one of the original equations **SC1** for both correct but no working
21	Complete correct **ruled** net	**3**	**B2** for 4 correct rectangles in correct places or **B1** for 2 correct side rectangles in correct places
22(a)	Points plotted at (4.5, 33) and (6.5, 35)	**1**	
22(b)	Positive	**1**	
22(c)	Correct ruled line	**1**	
22(d)	33.5 to 37.5	**1FT**	**FT** from *their* line provided positive gradient

Question	Answer	Marks	Part marks
23(a)(i)	Correct ruled bisector of AB with 2 pairs of arcs	**2**	**B1** for correct bisector with no or incorrect arcs or 2 pairs of correct arcs
23(a)(ii)	Complete circle, radius 3 cm, centre C	**2**	**B1** for an arc of correct radius or a circle of incorrect radius
23(b)	Correct region shaded	**1**	dep on at least **B1** in both parts
24(a)(i)	338 or 338.3 nfww or 338.2 to 338.26	**3**	**M1** for 3×74 and **M1** for $74 \times \pi \div 2$
24(a)(ii)	7630 nfww or 7626 to 7627	**3**	**M1** for 74^2 and **M1** for $\frac{\pi \times 37^2}{2}$
24(b)	38100 nfww or 38200 or 38150 or 38130 to 38140	**1FT**	**FT** *their* **(a)(ii)** $\times 5$