Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

MATHEMATICS **0580/12**

Paper 1 (Core) **May/June 2019**

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.

Cambridge International will not enter into discussions about these mark schemes.

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Generic Marking Principles

These general marking principles must be applied by all examiners when marking candidate answers. They should be applied alongside the specific content of the mark scheme or generic level descriptors for a question. Each question paper and mark scheme will also comply with these marking principles.

GENERIC MARKING PRINCIPLE 1:

Marks must be awarded in line with:

- the specific content of the mark scheme or the generic level descriptors for the question
- the specific skills defined in the mark scheme or in the generic level descriptors for the question
- the standard of response required by a candidate as exemplified by the standardisation scripts.

GENERIC MARKING PRINCIPLE 2:

Marks awarded are always **whole marks** (not half marks, or other fractions).

GENERIC MARKING PRINCIPLE 3:

Marks must be awarded **positively**:

- marks are awarded for correct/valid answers, as defined in the mark scheme. However, credit is given for valid answers which go beyond the scope of the syllabus and mark scheme, referring to your Team Leader as appropriate
- marks are awarded when candidates clearly demonstrate what they know and can do
- marks are not deducted for errors
- marks are not deducted for omissions
- answers should only be judged on the quality of spelling, punctuation and grammar when these features are specifically assessed by the question as indicated by the mark scheme. The meaning, however, should be unambiguous.

GENERIC MARKING PRINCIPLE 4:

Rules must be applied consistently e.g. in situations where candidates have not followed instructions or in the application of generic level descriptors.

GENERIC MARKING PRINCIPLE 5:

Marks should be awarded using the full range of marks defined in the mark scheme for the question (however; the use of the full mark range may be limited according to the quality of the candidate responses seen).

GENERIC MARKING PRINCIPLE 6:

Marks awarded are based solely on the requirements as defined in the mark scheme. Marks should not be awarded with grade thresholds or grade descriptors in mind.

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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	Partial Marks
1	Thirty thousand six hundred [and] eighty-two	**1**	
2	436 500	**1**	
3	$4 \times (6 - 2) + 1 = 17$	**1**	
4	48	**1**	
5(a)	999 877	**1**	
5(b)	–7	**1**	
6(a)	Trapezium	**1**	
6(b)	Obtuse	**1**	
7(a)	Any 15 blocks shaded	**1**	
7(b)	2 correct squares shaded	**1**	
8(a)	*b*	**1**	
8(b)	*d*	**1**	
9		**2**	**B1** for 11, 14, 9, 5, 3 allow one error or omission or for 50 − 42 seen or for 8 purple
10(a)	0.048 cao	**1**	
10(b)	5.27×10^{-3}	**1**	
11	6	**2**	**M1** for $2 \times 3^2 \times 5$ or $2^4 \times 3$ or for 2×3 as final answer or **B1** for 2 or 3 as final answer
12	14.7	**2**	**M1** for $\frac{1}{2} \times 8.4 \times 3.5$ oe
13	74.4 or 74.36…	**2**	**M1** for $\cos[x =] \frac{6.2}{23}$ oe

Question	Answer	Marks	Partial Marks
14(a)	160	**1**	
14(b)	Cone, [square based] pyramid	**2**	**B1** for each
15(a)	3 : 8 cao	**2**	**B1** for 6 : 16 or $1:\frac{8}{3}$ or $1:2\frac{2}{3}$ or 1 : 2.67 or $\frac{3}{8}$:1 or 0.375:1 If 0 scored, **SC1** for 8 : 3
15(b)	0	**1**	
16(a)	$x^3 - 7x^2$ final answer	**2**	**B1** for $x^3 - jx^k \quad j \neq 0$ or $nx^p - 7x^2$ $n \neq 0$ as answers If 0 scored, **SC1** for correct answer seen then spoilt
16(b)	$y(y + 1)$ final answer	**1**	
17(a)	$7^2 = 49$ and $8^2 = 64$ or $\sqrt{49} = 7$ and $\sqrt{64} = 8$	**2**	**B1** for $7^2 = 49$ or $8^2 = 64$ or 49 and 64 or values of at least $\sqrt{50}$ (or $\sqrt{51}$) and $\sqrt{59}$ (or $\sqrt{60}$) without further comment
17(b)	53 or 59	**1**	
18(a)	720	**1**	
18(b)	175 cao	**2**	**M1** for $\frac{2.8\times1000}{80}$[×5] or $\frac{2.8\times1000\times45}{\textit{their}\textbf{(a)}}$ or **B1** for figs 175
19(a)	$10m^5$ final answer	**2**	**B1** for $10m^k$ or km^5 as final answer
19(b)	x^{24} final answer	**1**	
20	$\frac{9}{4}\times\frac{7}{3}$ or $\frac{63}{28}\div\frac{12}{28}$ oe with common denominator	**M2**	**B1** for $\frac{9}{4}$ oe seen or **M1** for *their* $\frac{9}{4}\times\frac{7}{3}$
	$5\frac{1}{4}$ cao	**A1**	
21	23.1 or 23.137 to 23.139 or 23.14	**3**	**M2** for $\frac{9\pi}{2}$ oe or **M1** for 9π oe
22	10.5 oe isw	**3**	**B2** for 630 or **M1** for 630*k* or **B1** for 3 correct multiples of each

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Question	Answer	Marks	Partial Marks
23	$x = \sqrt{\frac{7y+8}{5}}$ oe final answer	**3**	**M1** for $5x^2 = 4y + 3y + 8$ or better **M1** for $x^2 = \frac{their(4y+3y)+8}{5}$ or better **M1** for $x = \sqrt{\frac{their(7y)+8}{5}}$ An incorrect final answer scores a maximum of 2
24(a)(i)	Ruled bisector of AB with 2 pairs of correct arcs	**2**	**M1** for 2 pairs of correct arcs or **B1** for correct ruled bisector with incomplete or no arcs
24(a)(ii)	Arc centre C radius 4 cm	**1**	
24(b)	Closed region shaded	**1**	

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