Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

MATHEMATICS **0580/33**

Paper 3 (Core) **May/June 2018**

MARK SCHEME

Maximum Mark: 104

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.

Cambridge International is publishing the mark schemes for the May/June 2018 series for most Cambridge IGCSE™, Cambridge International A and AS Level and Cambridge Pre-U components, and some Cambridge O Level components.

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.

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(a)(i)	Fri[day]	**1**	
1(a)(ii)	7	**1**	
1(a)(iii)	–5	**1**	
1(b)(i)	10 cao	**3**	**M2** for $\frac{6.5\times60}{39}$ oe or **M1** for distance ÷ speed
1(b)(ii)	1149	**4**	**M2** for (6.5 × 1000) ÷ (π × 1.8) oe or **M1** for π × 1.8 oe **A1** for 1149.3 to 1149.5 **B1** for *their* answer to at least 1dp truncated to the integer
1(c)	13 10	**3**	**M2** for [LCM=] 2 × 3 × 3 × 5 or 90 or **M1** for [30=] 2 × 3 × 5 or [45=] 3 × 3 × 5 OR **M2** for listing times or multiples to at least 13 10 or 90 or **M1** for adding times i.e. one correct addition e.g. 12 10
1(d)(i)	47	**1**	
1(d)(ii)	10 21	**1**	
1(e)	8	**2**	**M1** for 437 ÷ 62 oe implied by 7.04… or 7.05
2(a)	[star] 6 correct lines only	**2**	**B1** for 3 correct lines
	[rectangle] 2 correct lines only	**2**	**B1** for only 1 correct line or 2 correct lines and 1 wrong
2(b)	[x =] 66 [y =] 114	**2**	**B1** for one correct angle or for both angles adding to 180

Question	Answer	Marks	Partial Marks
2(c)	144	**3**	**M1** for 360 ÷ 10 soi by 36 **M1** for [y =] 180 – *their* 36 If 0 scored **SC2** for a correct interior angle of a regular polygon (greater than 90), providing not from wrong working
2(d)	[j =] 53 [k =] 37	**3**	**B2** for one correct angle or **B1** for 90 seen, marked on drawing in the correct place or for both angles adding to 90
2(e)	72	**3**	**M1** for (18 × 35) ÷ 2 implied by 315 **M1** for (18 × 27) ÷ 2 implied by 243
3(a)	51.5	**3**	**M2** for 4 × 8 + 9.5 + 10 oe or **B1** for two from 8 or 32, 9.5 and 10
3(b)	13.4[0]	**3**	**M2** for 4.2[0] + 2 × 2.8[0] + 2 × 1.8[0] oe or **M1** for two correct categories
3(c)	2.2[0]	**2**	**M1** for 6 × 1.3[0] implied by 7.8[0]
3(d)	27 053	**1**	
3(e)	13.7 or 13.70 to 13.71	**3**	**M2** for $\frac{14100-12400}{12400}$[× 100] or $\frac{14100}{12400}\times 100$ [–100] or $\left(\frac{14100}{12400}-1\right)$[×100] or **M1** for 14100 – 12400 or $\frac{14100}{12400}$ oe
3(f)	2 9 1 5 6 4	**3**	**B1** for each pair of 29, 15 and 64
4(a)(i)	6	**1**	
4(a)(ii)	8.5	**2**	**M1** for $8x - 6x = 2 + 15$ or better
4(b)	$5(x - 3)$ final answer	**1**	
4(c)	$5x - 4y$ final answer	**2**	**B1** for $5x + ky$ or $kx - 4y$ (k could be 0)
4(d)	61	**2**	**B1** for 55 or 6 or **M1** for 5 × 11 – 2 × –3
4(e)	$p=\frac{H+3}{7}$ oe final answer	**2**	**M1** for correct first step
4(f)(i)	7	**1**	
4(f)(ii)	–10	**1**	

Question	Answer	Marks	Partial Marks
5(a)(i)	1	**1**	
5(a)(ii)	7	**1**	
5(a)(iii)	4 nfww	**2**	**M1** for 1 1 2 3 5 … or … 3 5 6 7 8 or 3 and 5 selected
5(b)(i)	50	**1**	
5(b)(ii)	3.28	**3**	**M1** for [0 × 5] + 1 × 7 + 2 × 8 + 3 × 10 + 4 × 6 + 5 × 4 + 6 × 5 + 7 × 3 + 8 × 2 oe implied by 164 **M1dep** for *their* 164 ÷ *their***(b)(i)**
5(c)(i)	23 38 114	**3**	**B1** for each or if 0 scored **M1** for 123 ÷ 41 or 54 ÷ 18 or 3
5(c)(ii)	correct line	**1**	
6(a)	–1 … –2 … –6 … 6 … 2 … 1	**3**	**B2** for 4 or 5 correct or **B1** for 2 or 3 correct
6(b)	correct smooth curves	**4**	**B3FT** for 9 or 10 points plotted correctly **B2FT** for 7 or 8 points plotted correctly **B1FT** for 5 or 6 points plotted correctly **FT** *their* table
6(c)	correct continuous ruled line	**1**	
6(d)	–1.2 oe	**1**	or **FT** *their* line and *their* graph
7(a)	Enlargement [centre] (3, –1) [s.f.] 2	**3**	**B1** for each
7(b)	Rotation [centre] (0, 0) oe 180° oe	**3**	**B1** for each
7(c)(i)	Correct translation points (–4, 3), (–1, 3), (–3, 7)	**2**	**B1** for a correct horizontal or vertical movement i.e. by $\begin{pmatrix}-6\\k\end{pmatrix}$ or $\begin{pmatrix}k\\5\end{pmatrix}$
7(c)(ii)	Correct reflection points (2, –4), (5, –4), (3, –8)	**2**	**B1** for a correct reflection in $y = k$
8(a)(i)	$\frac{6}{14}$ oe isw	**1**	
8(a)(ii)	$\frac{11}{14}$ oe isw	**1**	

Question	Answer	Marks	Partial Marks
8(a)(iii)	0 isw	**1**	
8(b)(i)	[0].18 oe	**2**	**M1** for [1 –] (0.46 + 0.22 + 0.14) oe
8(b)(ii)	Brown	**1**	
8(b)(iii)	7	**1**	
9(a)(i)	36	**1**	
9(a)(ii)	add 7 oe	**1**	
9(a)(iii)	$7n + 1$ oe final answer	**2**	**B1** for $7n + c$ or $kn + 1$ ($k \neq 0$) or $7n + 1$ or $8 + (n – 1)7$ spoilt
9(b)	11 14 19	**2**	**B1** for 2 correct If 0 scored **SC1** for 10, 11, 14
9(c)	n^3	**1**	