Cambridge Assessment International Education
Cambridge International General Certificate of Secondary Education

MATHEMATICS **0580/31**

Paper 3 (Core) **October/November 2017**

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 October/November 2017 series for most Cambridge IGCSE®, Cambridge International A and AS Level components and some Cambridge O Level components.

® IGCSE is a registered trademark.

© UCLES 2017

https://xtremepape.rs/

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)	16	**1**	
1(a)(ii)	–15	**1**	
1(b)(i)	Friday	**1**	
1(b)(ii)	6	**1**	
1(c)(i)	1605 or 405 pm	**1**	
1(c)(ii)	4	**1**	
2(a)	180.5[0]	**3**	**M2** for $3 \times 24 + 5 \times 12.50 + 46$ oe or **M1** for 3×24 or 5×12.50 or better, soi by 72 or 62.5
2(b)	69.12	**2**	**M1** for 64×1.08 oe
2(c)	12	**3**	**M2** for $(\frac{280}{250} - 1) \times 100$ or $\frac{280-250}{250} \times 100$ oe or **M1** for $\frac{280}{250} - 1$ or $\frac{280}{250} \times 100$ or $\frac{280-250}{250}$ oe
2(d)	561	**3**	**M1** for 5.5×8.5 soi by 46.75 **M1** for *their* 46.75×12
2(e)	4287.66	**3**	**M2** for $3600 \times (1 + \frac{6}{100})^3$ oe or **M1** for $3600 \times (1 + \frac{6}{100})^2$ oe soi by 4044.96 If zero scored, **SC2** for 687.6576, 687.658, 687.66, 687.65, 687.7, 688 or 690

© UCLES 2017

https://xtremepape.rs/

Question	Answer	Marks	Partial marks
3(a)(i)	Written test and a valid reason	**1**	
3(a)(ii)	Positive	**1**	
3(a)(iii)	(45,10) indicated	**1**	
3(a)(iv)	42	**1**	
3(b)(i)	29	**2**	**M1** for 6 in the correct order, 8 14 17 21 23 29… or … 29 30 32 39 41 48
3(b)(ii)	27.5 or 27.45 to 27.46	**2**	**M1** for all 11 numbers added, allowing one error or omission, and divided by 11
4(a)(i)	Correct point plotted	**1**	
4(a)(ii)	Right-angled or scalene	**1**	
4(a)(iii)	8 4	**1**	
4(a)(iv)(a)	0.5 oe	**2**	**M1** for attempt at rise ÷ run
4(a)(iv)(b)	[y =] 0.5x oe	**1FT**	Correct or **FT** *their* **(iv)(a)**
4(b)(i)	…1 …–5 –5…1 15	**3**	**B2** for 3 or 4 correct or **B1** for 1 or 2 correct
4(b)(ii)	Correct curve	**4**	**B3FT** for 8 or 9 points correctly plotted **or B2FT** for 6 or 7 points correctly plotted **or B1FT** for 4 or 5 points correctly plotted
4(b)(iii)	–2.8 1.8	**2FT**	**B1FT** for each
5(a)	51.6	**2**	**B1** for 4.3[cm]
5(b)	[0]47	**1**	
5(c)	292	**1**	
5(d)(i)	Arc centre A radius 7 cm	**1**	
	Arc centre C radius 3.5 cm	**1**	
	One point **marked** at intersection of correct arcs	**1**	If zero scored, **SC1** for any arc centred on A or C, or correct point marked with no arcs
5(d)(ii)	504	**2**	**M1** for 84 ÷ *their* time or 84 × 6
5(e)	298	**2**	**M1** for 118 + 180 oe

© UCLES 2017

https://xtremepape.rs/

Question	Answer	Marks	Partial marks
6(a)(i)	1, 2, 3, 6, 9, 18 only	**2**	**B1** for 4 or 5 correct factors and no extras or 6 correct with one extra
6(a)(ii)	Any multiple of 30	**1**	
6(a)(iii)	46.2	**1**	
6(a)(iv)	15.625	**1**	
6(a)(v)	5	**1**	
6(b)	$2^3 \times 3^2$	**2**	**M1** for a complete factor tree or 2, 2, 2, 3, 3 clearly identified as factors
6(c)	240	**2**	**M1** for [16=] 2^4 or $2 \times 2 \times 2 \times 2(\times 1)$ or [30=] $2 \times 3 \times 5(\times 1)$ or lists of multiples of both at least up to 240, or any product that equals 240 or **B1** for 240*n*
6(d)	20 00 or 8 pm	**3**	**M1** for [LCM of 6 and 9 =] 18(00) or **M1** for lists of multiples **B1FT** for "2 am" + *their* 18 correctly worked out soi OR **B2** for [clock A = 2] 8, 14, 20… and [clock B = 2] 11, 20…. or **B1** for [clock A = 2] 8, 14, 20…or [clock B = 2] 11, 20…
7(a)(i)	$\frac{6}{20}$ oe	**1**	
7(a)(ii)	$\frac{5}{20}$ oe	**1**	
7(a)(iii)	0	**1**	
7(b)	[0].28 oe	**2**	**M1** for 1 – 0.3 – 0.24 – 0.18 oe or 1 – 0.72 oe
7(c)	$\frac{8}{20}$	**1**	Accept 8 ÷ 20
	$\frac{6}{15}$	**1**	Accept 6 ÷ 15
	Comparing the two fractions with equal denominators or as decimals	**1**	e.g. $\frac{8}{20} = \frac{24}{60}$ and $\frac{6}{15} = \frac{24}{60}$ or both shown equal to $\frac{2}{5}$ or [0] .4 or 40%

© UCLES 2017

https://xtremepape.rs/

Question	Answer	Marks	Partial marks
8(a)	$8x + 7$ final answer	**2**	**B1** for $10x + 15$ or $-2x - 8$ or $8x + j$ or $kx + 7$ as final answer
8(b)(i)	$6x$ final answer	**1**	
8(b)(ii)	$5a$ final answer	**1**	
8(c)	$10y + 12$ or $2(5y + 6)$ final answer	**3**	**M1** for $2(3y + 1) + 2(2y + 5)$ oe **B1** for $10y + j$ or $ky + 12$ ($k \neq 0$)
8(d)	$7(m + 6) + 3m = 182$ or $7m + 42 + 3m = 182$	**2**	**B1** for $m + 6$ or $7t + 3m = 182$
	14	**3**	**M1** for $7m + 42$ [$+ 3m = 182$] **M1** for $7m + 3m = 182 - 42$ or better OR **M2** for [$m =$] $(182 - (6 \times 7)) / (7 + 3)$ or better or **M1** for $182 - (6 \times 7)$ or better
9(a)(i)	7.5	**2**	**M1** for $\frac{1}{2} \times 5 \times 3$ or evidence of counting squares
9(a)(ii)	Correct enlargement	**2**	**B1** for one line correctly scaled
9(b)(i)	Rotation [centre] (0,0) oe 180°	**3**	**B1** for each
9(b)(ii)	Correct reflection with points (–3,–3), (–1,–5) and (–6,–6)	**2**	**B1** for reflection in $y = k$ or $x = -1$
9(b)(iii)	Correct translation with points (4,4), (2,2) and (–1,5)	**2**	**B1** for a correct horizontal translation (5 to the right) or a correct vertical translation (1 up)
10(a)(i)	30	**1**	
10(a)(ii)	add 8 oe	**1**	
10(a)(iii)	$8n - 10$ oe final answer	**2**	**B1** for $8n + j$ or $kn - 10$ ($k \neq 0$)
10(b)	9	**1**	
10(c)	34	**1**	

© UCLES 2017

https://xtremepape.rs/