Cambridge International Examinations
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MATHEMATICS **0580/13**

Paper 1 (Core) **May/June 2016**

MARK SCHEME

Maximum Mark: 56

Published

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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	Mark	Part marks
1	9 082 507	**1**	
2	71 000 cao	**1**	
3	17	**1**	
4	Negative	**1**	
5	1.72	**1**	
6 (a)	2 −6 −8	**1**	
(b)	3 −8	**1**	
7	0.5 or $\frac{1}{2}$	**2**	**M1** for correct first step e.g. $6y + 6 = 9$ or $y + 1 = \frac{9}{6}$
8 (a)	$\begin{pmatrix} -6 \\ 3 \end{pmatrix}$	**1**	
(b)	Point B at $(-3, 2)$	**1**	
9	10.3 oe	**2**	**M1** for $5x = 51.5$ oe
10	4.95 5.05	**1, 1**	**SC1** for both correct but reversed
11	$\frac{1}{12} \times \frac{6}{5}$ oe	**M1**	Must be shown
	$\frac{1}{10}$ final answer cao	**A1**	
12	22.1	**2**	**M1** for $\cos 16 = \frac{AC}{23}$ soi
13	128	**3**	**M1** for 800 ÷ 6.24 **A1** for 128.2 .....

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Question	Answer	Mark	Part marks
14	4 990 or 4 989 or 4 989.2 or 4 989.23	**3**	**M2** for $4\,500\left(1+\frac{3.5}{100}\right)^3$ oe or **M1** for $4\,500\left(1+\frac{3.5}{100}\right)^2$ oe
15 (a)	72	**1**	
(b)	123	**2FT**	FT dep. on answer being obtuse **M1** for (360 – *their*(a) – 42) [÷2]
16	For correctly eliminating one variable	**M1**	Or correctly rearranging one equation and substituting into the other
	[x =] 3.5	**A1**	
	[y =] −4.5	**A1**	
			If zero scored **SC1** for 2 values satisfying one of the original equations or if no working shown but 2 correct answers given
17 (a)	$\frac{24}{100}$ oe	**1**	
(b)	$\frac{78}{100}$ oe	**2**	**M1** for $\frac{18+36+24}{100}$ or $1-\frac{22}{100}$
(c)	0	**1**	
18 (a)	2 cao	**2**	**M1** for rise/run attempted e.g. 4/2 or other correct method for finding gradient or **SC1** for $y = 2x - 1$ as answer
(b)	$y = 2x + 6$ oe	**2FT**	**FT** for $y =$ *their(a)*$x + 6$ **B1** for $y = mx + 6$ ($m \neq 0$ or 2) or $y = 2x$ [+ k] or $y =$ *their(a)*x [+ k] ($k \neq 6$) or for answer $2x + 6$ or answer *their(a)*$x + 6$
19 (a)	44	**3**	**M2** for $\sqrt{93.5^2 - 82.5^2}$ or **M1** for $CD^2 + 82.5^2 = 93.5^2$
(b)	33	**1FT**	**FT** 93.5 – (82.5 + *their* (a))
20 (a) (i)	2400	**1**	
(ii)	Ruled line (08 15, 0) to (08 45, *their* 2400)	**1FT**	Follow through *their* 2400 and 30 minute time period

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Question	Answer	Mark	Part marks
(b) (i)	Horizontal line 1.5 hours from (*their* 08 45, *their* 2400)	**1FT**	**FT** (*their* 08 45 + 90 min, *their* 2400)
	Line from *their* (10 15, 2400) to Home axis 15 min later	**1FT**	**FT** (*their* 10 15, *their* 2400) to (*their* 10 15 + 15 min, 0)
(ii)	160	**2FT**	**M1FT** for *their* 2400 ÷ 15
21 (a) (i)	120	**1**	
(ii)	15	**2**	**M1** for *their* 120 ÷ 360 [× 45] or 45 ÷ 360 [× *their* 120]
(b)	192	**2**	**M1** for 24 ÷ 45 [× 360]
(c)	Line giving angles of 192° and 48° from given lines	**1FT**	**FT** *their* 192
(d)	Blue and an acceptable reason	**1**	

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