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**MATHEMATICS**

**0580/13**

Paper 1 (Core)

**May/June 2017**

MARK SCHEME

Maximum Mark: 56

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**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
nfw	not from wrong working
soi	seen or implied

Question	Answer	Marks	Part marks
1	374	<b>1</b>	
2(a)	radius	<b>1</b>	
2(b)	chord	<b>1</b>	
3(a)	[0].16	<b>1</b>	
3(b)	$\frac{16}{100}$ oe	<b>1</b>	
4(a)	Time correctly drawn on clock face	<b>1</b>	
4(b)	15 45	<b>1</b>	
5(a)	5400 cao	<b>1</b>	
5(b)	42.348 cao	<b>1</b>	
6	5, 3, 6, 4, 7	<b>2</b>	<b>B1</b> for 3 correct If zero scored, <b>SC1</b> for correct tally, or frequencies if frequency column incorrect
7(a)	-6	<b>1</b>	
7(b)	8, 11, 14	<b>1</b>	
8(a)	4913	<b>1</b>	
8(b)	9	<b>1</b>	
9	$4x(x - 2y)$ final answer	<b>2</b>	<b>M1</b> for $4(x^2 - 2xy)$ or $x(4x - 8y)$ or $2(2x^2 - 4xy)$ or $2x(2x - 4y)$
10(a)	(0, -6)	<b>1</b>	
10(b)	4	<b>1</b>	
11(a)	8	<b>1</b>	
11(b)	-9	<b>1</b>	

Question	Answer	Marks	Part marks
11(c)	$\frac{3}{5}$ or equivalent fraction	1	
12(a)	10	2	<b>M1</b> for $5x + 6x + 7x = 180$ oe or $\frac{180}{5+6+7}$ or <b>B1</b> for angles 50, 60 and 70
12(b)	70	1FT	<b>FT</b> $7 \times$ their (a) provided $0 < \text{their answer} < 180$
13(a)(i)	$\begin{pmatrix} 30 \\ -20 \end{pmatrix}$	1	
13(a)(ii)	$\begin{pmatrix} -6 \\ 4 \end{pmatrix}$	1	
13(b)	-4	1	
14(a)	1.4	1	
14(b)	3.42	2	<b>M1</b> for (sum of the 10 numbers) $\div$ 10
15(a)	83 or 89	1	
15(b)	210	2	<b>M1</b> for $210 \times k$ or for 3,7 and 2,3,5 seen or for a list of at least 4 correct multiples of both 21 and 30 or $2 \times 3 \times 5 \times 7$ as answer
16(a)	8	1	
16(b)	[x = ] 0.5	1	
	[y = ] 5	1	If zero scored, <b>SC1</b> for correct substitution and evaluation to find the other variable
17	646 or 646.1[3...]	3	<b>M2</b> for $600 \times 1.025^3$ oe or <b>M1</b> for $600 \times 1.025^2$ oe If zero scored, <b>SC2</b> for 46.1 or 46.1[3...]
18	common denominator 12	<b>B1</b>	accept $k \times 12$ throughout
	one correct from $\frac{9}{12}$ or $\frac{8}{12}$ oe	<b>M1</b>	accept $\frac{9k}{12k}$ or $\frac{8k}{12k}$
	$\frac{5}{6}$ cao	<b>A2</b>	<b>A1</b> for $\frac{10}{12}$ or $\frac{10k}{12k}$
19(a)	2 points correctly plotted	1	
19(b)	positive	1	

Question	Answer	Marks	Part marks
19(c)	ruled line of best fit	<b>1</b>	
19(d)	80 to 92	<b>1</b>	
20(a)	8.91	<b>2</b>	<b>M1</b> for [ $BC^2 =$ ] $6.3^2 + 6.3^2$ or $6.3 \div \sin 45$ or $6.3 \div \cos 45$
20(b)	13.5 or 13.48...	<b>2</b>	<b>M1</b> for $\sin [=] \frac{52}{223}$
21(a)	6	<b>1</b>	
21(b)	$2x^3$ final answer	<b>1</b>	
21(c)	$15y^4$ final answer	<b>2</b>	<b>B1</b> for $15y^k$ or $ky^4$ as final answer ( $k \neq 0$ )