



**Cambridge International Examinations**  
Cambridge International General Certificate of Secondary Education

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**MATHEMATICS**

**0580/12**

Paper 1 (Core)

**October/November 2016**

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.

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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 (a)	6	1	
(b)	2.5	1	
2 (a)	$\frac{9}{100}$	1	
(b)	[0].3	1	
3	< > =	2	B1 for two correct
4 (a)	Correct arrow	1	
(b)	$\frac{2}{20}$ oe or 0.1 or 10%	1	
5 (a)	$6 + 12 \div (2 \times 3) = 8$	1	
(b)	0.625 oe	1	
6 (a)	$\begin{pmatrix} 15 \\ -21 \end{pmatrix}$	1	
(b)	$\begin{pmatrix} 3 \\ -13 \end{pmatrix}$	1	
7 (a)	5	1	
(b)	6	1	
8 (a)	24 or 48 or 72 or ...	1	
(b)	53 or 59	1	
9 (a)	15 000 cao	1	
(b)	$1.5 \times 10^4$	1FT	FT their (a)

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Question	Answer	Mark	Part marks
10	25	2	<b>B1</b> for 67 or 113 seen once in correct position or <b>M1</b> for $a + 42 = 67$ or $a + 42 + 113 = 180$ or better
11	21	2	<b>M1</b> for $k - 8 = 13$ or $6k - 48 = 78$ or better
12	58	2	<b>M1</b> for $\frac{(13+16) \times 4}{2}$ or $4 \times 13 + \frac{1}{2} \times 4 \times 3$ oe
13	7.42 or 7.418 to 7.419	2	<b>M1</b> for $\sin [32^\circ] = \frac{x}{14}$ or better
14	262	3	<b>M2</b> for $9 \times 6 \times 5 - 2 \times 2 \times 2$ oe or <b>M1</b> for $9 \times 6 \times 5$ or $2 \times 2 \times 2$ oe
15 (a)	0.98 oe	1	
(b)	50 cao	2	<b>M1</b> for $2500 \times 0.02$ If zero scored, <b>SC1</b> for answer of 2450
16 (a)	(7, 1)	1	
(b)	-1.25 or $-\frac{5}{4}$ or $-1\frac{1}{4}$	2	<b>M1</b> for rise/run
17 (a)	B and D	1	
(b)	5.6	2	<b>M1</b> for $\frac{h}{4.2} = \frac{12.8}{9.6}$ oe or correct scale factor
18 (a)	(9, 14) identified	1	
(b)	Positive	1	
(c)	Ruled line of best fit	1	
(d)	Speaking test score	1FT	<b>Strict FT</b> their straight line of best fit
19 (a)	32	1	
(b)	150	3	<b>M2</b> for $180 - \frac{360}{12}$ or $\frac{180 \times (12 - 2)}{12}$ or $\frac{(2 \times 12 - 4) \times 90}{12}$ or <b>M1</b> for $\frac{360}{12}$ or $180 \times (12 - 2)$ or $(2 \times 12 - 4) \times 90$ soi

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Question	Answer	Mark	Part marks
20	Common denominator 24	<b>B1</b>	accept $k \times 24$
	Two correct from $\frac{18}{24}$ , $\frac{16}{24}$ and $\frac{3}{24}$ oe	<b>M1</b>	accept $\frac{18k}{24k}$ , $\frac{16k}{24k}$ and $\frac{3k}{24k}$
	$1\frac{7}{24}$ cao	<b>A2</b>	<b>A1</b> for $\frac{31}{24}$ or $\frac{31k}{24k}$ or $1\frac{7k}{24k}$
21 (a)	$9p$ final answer	<b>1</b>	
	$4q - 12$ final answer	<b>1</b>	
	$5t(2 + 3t)$ final answer	<b>2</b>	<b>M1</b> for $t(10 + 15t)$ or $5(2t + 3t^2)$
	$[x = ] 3$ , $[y = ] -2$ with supporting working	<b>2</b>	<b>B1</b> for one correct with working  If zero scored, <b>SC1</b> for 2 values satisfying one of the original equations or <b>SC1</b> if no working shown, but 2 correct answers given