

MARK SCHEME for the May/June 2014 series

0580 MATHEMATICS

0580/13

Paper 1 (Core), maximum raw mark 56

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
nfww	not from wrong working
soi	seen or implied

Question	Answers	Mark	Part Marks
1	-19	1	
2	64.5[0]	1	
3	128	1	
4	-107	1	
5	1	1	
6	4.5×10^4	1	
7	Cube net drawn correctly	1	
8	31, 37	1	
9	(a) $\begin{pmatrix} -6 \\ 8 \end{pmatrix}$	1	
	(b) $\begin{pmatrix} -5 \\ -2 \end{pmatrix}$	1	
10	(a) 8	1	
	(b) 1224 or 1292	1	
11	-3, -5, 0 [=] -8	2	B1 for -3, -5 and 0 in any order seen on left hand side. or B1 for -8 seen on answer line in correct position
12	24	2	M1 for $\sqrt{36} \times 4$ oe or B1 for 6 seen
13	8	2	B1 for 6×5 or better
14	-22	2	M1 for $3 \times (-4) - 5 \times 2$ or B1 for -12 or -10 seen in the working.

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15	(a)	$\frac{13}{24}$ oe	1	
	(b)	$\frac{11}{24}$ oe	1	
16		$\frac{7}{12}$ oe	2	B1 for $\frac{7}{6}$ or $(\frac{3}{6}$ and $\frac{4}{6})$ or $\frac{6}{12}$ and $\frac{8}{12}$ etc., or $\frac{3.5}{6}$
17		Perpendicular bisector with 2 pairs of correct arcs.	2	B1 for correct line or B1 for 2 pairs of correct arcs
18		84	2	M1 for $\frac{7}{6+8+9+7}$ or $\frac{360}{6+8+9+7}$
19		1030	2	M1 for $1350 \div 1.313$
20		Triangle at (2, -1) (2, 1) (1, -2)	2	B1 for translation by $\begin{pmatrix} k \\ -4 \end{pmatrix}$ or $\begin{pmatrix} 3 \\ k \end{pmatrix}$
21		12	2	M1 for $360 \div 30$
22	(a)	74	1	
	(b)	8.69	1	

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23		$\frac{5}{4}$ oe $\frac{5 \times 9}{4 \times 9}$ and $\frac{7 \times 4}{9 \times 4}$ oe or better $\frac{17}{36}$ oe working must be shown	B1 M1 A1	Do not allow decimals for the B1 , M1 or A1 e.g. $\frac{45}{36}$ and $\frac{28}{36}$ Follow through <i>their</i> $\frac{5}{4}$ for the M1 mark. Alt method 1: B1 for $\frac{1}{4} + \frac{2}{9}$ M1 for $\frac{1 \times 9}{4 \times 9}$ and $\frac{2 \times 4}{4 \times 9}$ oe e.g. $\frac{9}{36}$ and $\frac{8}{36}$ Alt method 2: B1 for $\frac{1}{4} - \frac{7}{9} + 1$ M1 for oe e.g. $\frac{9}{36}$ and $\frac{8}{36}$ ISW converting fraction answer to decimal.
24		$x = 4$ $y = 7$	3	M1 for correct method to eliminate one variable or (substitution) correct rearrangement of one equation seen substituted into the second equation. A1 for one correct answer. If M0 SC1 for both answers satisfying one of the original equations
25	(a)	6	1	M1 FT for $\frac{4}{\text{their}(c)} \times 60$ oe
	(b)	They are at the same place at the same time	1	
	(c)	16	1	
	(d)	15 cao	2	

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26	(a)	$5a(3a^2 - b)$	2	B1 for $a(15a^2 - 5b)$ or $5(3a^3 - ab)$
	(b)	$3x^6y^4$	2	B1 for x^6 or y^4 in a product on answer line
	(c)	$6 - 5x$ as final answer nfw	2	B1 for $3x - 6$ or $-8x + 12$ seen or SC1 for 6 or $-5x$ seen in final answer nfw
	(d)	3 nfw	3	M2 for $5x = 15$ or B1 for $3x + 24$ seen or M1 for $8x - 3x = 3 \times 8 - 9$ or better. If zero, SC1 for answer $[x =] -\frac{1}{5}$