CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the March 2015 series

0580 MATHEMATICS

0580/32 Paper 3 (Paper 32 – Core), maximum raw mark 104

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 will not enter into discussions about these mark schemes.

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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 (a) (i)	Violet	1	
(ii)	$\frac{50}{100}$ oe	1	
(iii)	8:3	2	**M1** for 32:12 or better or 80:30 better **SC1** for 3:8 or 6:7
(iv)	68	3	**M2** for $0.35 \times 280 - 0.12 \times 250$ or better or **M1** for 0.35×280 or 0.12×250 seen
(v)	True, False, True	2	**B1** for 2 correct
(vi)	[The] percentage is [smaller but it is] of a larger [total] number [of dresses]	1	
(b)	237.25	4	**B1** for 5.5 and 4.6 seen **M1FT** for *their* 5.5×12.50 + *their* 4.6×12.50 or better **M1** for $6 \times 2 \times 9.25$ or better OR **M1FT** for *their* $5.5 \times 12.50 + 6 \times 9.25$ **M1FT** for *their* $4.6 \times 12.50 + 6 \times 9.25$
2 (a)	67.5 72.5	1 1	**SC1** for both answers correct but reversed
(b) (i)	3	1	
(ii)	20	1	
(iii)	21	2	**M1** for 7 or more in order
(iv)	20.9 or 20.91 to 20.92	2	**M1** for clear attempt to add numbers and divide by 12
(v)	$\frac{3}{12}$ oe	1	
(c)	complete correct method shown and Bag B oe	3	**M2** for completely correct method or **M1** for one correct calculation seen
(d)	1.56	2	**M1** for $(100 - 35) \times 2.40 / 100$ oe

3	(a) (i)	4 points correctly plotted	2	**B1** for 3 correct points
	(ii)	positive	1	
	(iii)	correct ruled straight line	1	
	(iv)	74	1FT	Strict ft their line
	(b) (i)	$22 < \text{ans} \leqslant 23$	1	
	(ii)	$590 \leqslant \text{ans} \leqslant 620$	2	**M1** for $\frac{275}{their 50} \times their$ 110 oe
4	(a)	126	1	Accept 122 to 130
	(b)	240	1	
	(c)	Correct position on diagram	2	**B1** for angle 103° to 107° **B1** for distance 4.0 cm to 4.4 cm
	(d)	1 hour and 33 min	3	**M2** for $\frac{84}{54} \times 60$ oe or **M1** for $\frac{84}{54}$ or $\frac{30}{54} \times 60$
	(e)	15	2	**M1** for $\frac{54 \times 1000}{60 \times 60}$ or better
5	(a) (i)	8, 2, –4, 2	2	**B1** for 3 correct values
	(ii)	Correctly plotted points and smooth correct curve	4	**B3FT** for 8 correct **B2FT** for 6 or 7 correct **B1FT** for 4 or 5 correct **C1** for correct smooth curve passing below $y = -4$
	(b) (i)	$(-0.5, k)$ where $-4.5 \leqslant k < -4$	1	
	(ii)	$x = -0.5$	1	
	(c)	$-1.8 \leqslant x \leqslant -1.4$, $0.4 \leqslant x \leqslant 0.8$	2FT	**B1FT, B1FT** for values from their graph
	(d) (i)	$2x - 3$	2	**M1** for $\frac{rise}{run}$ or better If zero scored, **SC1** for $kx - 3$
	(ii)	9	1	
6	(a)	correct net drawn	2	**B1** for 2 correct faces seen added to correct edges of net
	(b)	60,1,1 or 30,2,1 or 20,3,1 or 15,4,1 or 15,2,2 or 12,5,1 or 10,6,1 or 10,3,2 or 6,5,2 or 5,4,3	2	**SC1** for 3 numbers with a product of 60 but including non-integer values

	(c)	24 cm^2	**2** **1**	**M1** for $2 \times 2 \times 6$ oe
	(d)	900	**1**	
	(e) (i)	7.55 or 7.549.....	**3**	**M2** for $\sqrt{(11^2 - 8^2)}$ or **M1** for $AB^2 + 8^2 = 11^2$
	(ii)	43.3 or 43.34	**2**	**M1** for $\cos [C] = \frac{8}{11}$ or better
	(f)	120 or 120.16 to 120.2	**4**	**B1** for 6.5 seen **M2** for *their* $6.5^2\pi$ – *their* $2^2\pi$ (must be using πr^2) or **M1** for $6.5^2\pi$ or $2^2\pi$ seen If **M0** scored, **SC1** for 165π or 518(.3) to 518.43 or 41.25π or 129.59.... to 129.6075
7	**(a) (i)**	Correct bisector drawn with 2 pairs of arcs	**2**	**B1** for correct bisector without arcs
	(ii)	Correct arc radius 6 cm centre *D*	**1**	
	(iii)	Correct shaded region	**1**	
	(b)	Two different correct triangles drawn	**4**	**B1, B1** for 40° angle at each *Y* **B1** for one *XZ* = 5 cm drawn **B1dep on previous 3 marks** for a different correct *XZ* = 5 cm drawn resulting in a second correct triangle If zero scored, **SC1 SC1** available for triangles drawn with 40° at *X*
8	**(a)**	4^2, 4×5 8^2, 4×9 101^2, 99^2 $(n + 1)^2$, $(n – 1)^2$	**1** **1** **1** **2**	**SC1** for $(n + 1)^2$ or $(n – 1)^2$ seen or for $n + 1^2$ and $n – 1^2$
	(b) (i)	23	**1**	
	(ii)	$4n – 1$ oe	**2**	**M1** for $4n$ seen
	(iii)	227	**1FT**	**FT** from **(b)(ii)** if in form $jn + k$ $j,k \neq 0$
	(iv)	No, oe, with valid reason	**2**	**M1FT** for (227), (231), 235 or ft from their **(b)(iii)** or 59.5 or ft $\frac{\textit{their}\textbf{(b)(ii)} - k}{j}$ **A1** for correct deduction and mention of 237 between 235 and 239 or 59.5 is not a whole number oe

9	**(a) (i)**	41	**1**	
	(ii)	6.8921×10^4	**1**	
	(iii)	69 000	**1**	
	(b)	8%	**3**	**M2** for $\frac{96550 - 88826}{96550} \times 100$ oe or **M1** for 7724 seen or $\frac{88826}{96550}$
	(c) (i)	$\frac{1}{25}$ or 0.04	**1**	
	(ii)	5	**1**	
	(iii)	Has more than 2 factors oe	**1**	
	(iv)	A decimal that is not truncated and it does not recur (or can't be written as a fraction) oe	**1**	