Cambridge International Examinations
Cambridge International General Certificate of Secondary Education

MATHEMATICS **0580/03**

Paper 3 (Core) **For Examination from 2015**

SPECIMEN MARK SCHEME

2 hours

MAXIMUM MARK: 104

The syllabus is approved for use in England, Wales and Northern Ireland as a Cambridge International Level 1/Level 2 Certificate.

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Types of mark

M marks are given for a correct method.
A marks are given for an accurate answer following a correct method.
B marks are given for a correct statement or step.
D marks are given for a clear and appropriately accurate drawing.
P marks are given for accurate plotting of points.
E marks are given for correctly explaining or establishing a given result.
SC marks are given for special cases that are worthy of some credit.

Abbreviations

cao	correct answer only
cso	correct solution only
dep	dependent
ft	follow through after error
isw	ignore subsequent working
oe	or equivalent
SC	Special Case
www	without wrong working
art	anything rounding to
soi	seen or implied

Qu.	Answers	Mark	Part Marks
1	**(a)** 25 000 000 cao	1	
	(b) $0.6 < 65\% < \frac{2}{3}$	1	
	(c) 20%	3	**B1** for 50 seen **M1** for $\frac{\text{their } 50}{250} \times 100$ or **B1** for 0.8 or 80 seen **M1** for 1 – their 0.8 or 100 – their 80
	(d) **(i)** 30	1	
	(ii) 40	2	**M1** for 360 – (90 + 150) implied by 120 seen
2	**(a)** $1.5(0) \times 10^2$ cao	1	
	(b) 100 cao	1	
	(c) 2 hours 15 minutes cao	1	
	(d) 16(:) 25 (pm) or (0)425 **pm**	2	**M1** for 2.5 (oe), 2hrs 30 min
	(e) $145 \leq d < 155$	2	**B1** for each value in correct place

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3	**(a)** **(i)** 36, 10	**1**	
	(ii) 29, 41, 13 any two	**2**	**B1** for each
	(iii) 36	**1**	
	(iv) 45, 15, 10 any two	**2**	**B1** for each
	(b) **(i)** 27	**2**	**B1** for 36 + 29 + … + 13 seen implied by 189
	(ii) 29	**2**	**M1** for attempting to order the numbers
	(iii) 35 cao	**1**	
	(c) **(i)** $\frac{2}{7}$ oe	**1**	
	(ii) $\frac{3}{7}$ oe	**1ft**	Their denominator from **(c)(i)**
4	**(a)** **(i)** 70 cao	**1**	
	(ii) 1.11(11…)	**2**	**B1** for $100 \div 90$, $10 \div 9$, $1\frac{1}{9}$
	(b) **(i)** 15 cao	**1**	
	(ii) (1500 – 15) × 1.04	**2**	**B1** for × 1.04, 1560, 15.60
	(c) 561.92	**3**	**M1** for 1544.40 – 950 – 10 (584.40) oe **M1** indep for ÷ 1.04
5	**(a)** $\frac{-4}{3}$ oe, –1.2 to –1.4	**2**	**B1** for attempt at $\frac{\text{rise}}{\text{run}}$
	(b) **(i)** 3, 2, 6	**3**	**B1** for each value
	(ii) Correct continuous line	**2ft**	Minimum length (0,3) to (6,0) **B1** for plotting their 3 points
	(c) $x = -2$, $y = 4$	**2ft**	**B1** for their x, **B1** for their y from their intersections

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6	**(a)** **(i)** Correct construction	**2**	**B1** for two lines or **B1** for accurate arcs seen or **B1** for one correct line with two arcs **SC1** for $AC = 6$ and $BC = 7$ with arcs
	(ii) 47° (45 – 49)	**1ft**	**Strict** ft their **(a)(i)**
	(iii) Correct construction	**2ft**	Their **(a)(i)** **B1** for accurate arcs no line or **B1** for accurate line drawn no arcs or **B1** for accurate line with arcs bisecting another angle
	(iv) 4 (3.8 – 4.2)	**1ft**	**Strict** ft their **(iii)** with intersection on opposite side of triangle
	(v) Correct construction	**2ft**	**B1** for accurate arcs no line or **B1** for accurate line drawn no arcs or **B1** for accurate line with arcs, bisecting AB or AC
	(vi) Correct region shaded	**1ft**	ft is for boundaries of correct perpendicular bisector of **their *BC*** and correct angle bisector of **their *ABC***, with or without arcs
	(b) **(i)** Correct scale drawing of PQ	**2**	**B1** for accurate angle 40°, **B1** for PQ 8cm
	(ii) Correct scale drawing of their QR	**2**	**B1** for accurate angle 160°, **B1** for QR 6cm
	(iii) 35 to 37	**1ft**	Measure × 5 ± 1km
	(iv) 264 to 268	**1ft**	
7	**(a)** −6 www	**3**	**M2** for $8 = x + 6 + 8$ or better or $-x + 8 = 6 + 8$ or better **M1** for $2x + 8$ or $3x + 6$ or $3x + 14$
	(b) $\frac{3-b}{a}$ or $\frac{3}{a} - \frac{b}{a}$	**2**	**B1** for $3 - b$ seen or $z + \frac{b}{a} = \frac{3}{a}$
	(c) 3	**2**	**B1** for $\frac{54}{2}$ or better **SC1** for embedded answer ie $2 \times 3^3 = 54$ or $2 \times 3 \times 3 \times 3 = 54$
	(d) **(i)** $x + x + 2x - 5 + 2x - 5 = 6x - 10$	**2**	**M1** accept $2x + 2(2x - 5)$ or $2(x + 2x - 5)$ **E1** dep
	(ii) 10	**2**	**M1** for $6x - 10 = 50$
8	**(a)** Translation $\begin{pmatrix} 0 \\ -6 \end{pmatrix}$	**2**	**B1** for translation **B1** for column vector
	(b) Correct line drawn	**1**	Continuous full line. Accept freehand.
	(c) **(i)** Correct reflection	**1ft**	Their **(b)**
	(ii) Correct enlargement	**2**	**B1** for any other enlargement scale factor 2
9	**(a)** $3x(x + 4)$	**2**	**B1** for $3(x^2 + 4x)$ or **B1** for $x(3x + 12)$ or **B1** for $3x(x + 4)$ seen (if not final answer)
	(b) 20	**2**	**B1** for 8 or 12 seen
	(c) $6x^7$	**2**	**B1** for kx^7 or for $6x^k$, $k \neq 0$

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10	**(a)** 5.4 cao	**3**	**M1** for $2^2 + 5^2$ (= x^2) implied by 29 **A1** 5.38(51..) or $\sqrt{29}$ or 5.39 **B1** indep for rounding their answer to 1 decimal place
	(b) 5	**2**	**M1** for 0.5 × 5 × 2 oe
	(c) 50	**1ft**	10 × their **(b)**
	(d) 134	**3ft**	**M2** for 2 × their **(b)** + 10 × their **(a)** + 2 × 10 + 5 × 10 or better **M1** for any 3 faces correct
	(e) 301.5(0)	**1ft**	Their **(d)** × 2.25
11	**(a)** Correct shape drawn	**1**	
	(b) 16, 21, 26	**3**	**B1** for each **SC1** "their 16" + 5 **SC1** "their 21" + 5
	(c) 41	**1**	
	(d) $5n + 1$	**2**	**B1** for $5n$, **B1** for +1
	(e) 501	**1ft**	Their **(d)** if linear
	(f) 13	**2ft**	Their **(d)** if linear **B1** for their **(d)** = 66

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