



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.

This document consists of **5** printed pages and **1** blank page.



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

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

6	<p>(a) (i) Correct construction</p> <p>(ii) 47° (45 – 49)</p> <p>(iii) Correct construction</p> <p>(iv) 4 (3.8 – 4.2)</p> <p>(v) Correct construction</p> <p>(vi) Correct region shaded</p> <p>(b) (i) Correct scale drawing of PQ</p> <p>(ii) Correct scale drawing of their QR</p> <p>(iii) 35 to 37</p> <p>(iv) 264 to 268</p>	<p>2</p> <p>1ft</p> <p>2ft</p> <p>1ft</p> <p>2ft</p> <p>1ft</p> <p>2</p> <p>2</p> <p>1ft</p> <p>1ft</p>	<p>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</p> <p>Strict ft their (a)(i)</p> <p>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</p> <p>Strict ft their (iii) with intersection on opposite side of triangle</p> <p>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</p> <p>ft is for boundaries of correct perpendicular bisector of their BC and correct angle bisector of their ABC, with or without arcs</p> <p>B1 for accurate angle 40°, B1 for PQ 8cm</p> <p>B1 for accurate angle 160°, B1 for QR 6cm</p> <p>Measure $\times 5 \pm 1$km</p>
7	<p>(a) -6 www</p> <p>(b) $\frac{3-b}{a}$ or $\frac{3}{a} - \frac{b}{a}$</p> <p>(c) 3</p> <p>(d) (i) $x + x + 2x - 5 + 2x - 5 = 6x - 10$</p> <p>(ii) 10</p>	<p>3</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p> <p>2</p>	<p>M2 for $8 = x + 6 + 8$ or better or $-x + 8 = 6 + 8$ or better M1 for $2x + 8$ or $3x + 6$ or $3x + 14$</p> <p>B1 for $3 - b$ seen or $z + \frac{b}{a} = \frac{3}{a}$</p> <p>B1 for $\frac{54}{2}$ or better</p> <p>SC1 for embedded answer ie $2 \times 3^3 = 54$ or $2 \times 3 \times 3 \times 3 = 54$</p> <p>M1 accept $2x + 2(2x - 5)$ or $2(x + 2x - 5)$ E1 dep</p> <p>M1 for $6x - 10 = 50$</p>
8	<p>(a) Translation $\begin{pmatrix} 0 \\ -6 \end{pmatrix}$</p> <p>(b) Correct line drawn</p> <p>(c) (i) Correct reflection</p> <p>(ii) Correct enlargement</p>	<p>2</p> <p>1</p> <p>1ft</p> <p>2</p>	<p>B1 for translation B1 for column vector</p> <p>Continuous full line. Accept freehand.</p> <p>Their (b)</p> <p>B1 for any other enlargement scale factor 2</p>
9	<p>(a) $3x(x + 4)$</p> <p>(b) 20</p> <p>(c) $6x^7$</p>	<p>2</p> <p>2</p> <p>2</p>	<p>B1 for $3(x^2 + 4x)$ or B1 for $x(3x + 12)$ or B1 for $3x(x + 4)$ seen (if not final answer)</p> <p>B1 for 8 or 12 seen</p> <p>B1 for kx^7 or for $6x^k$, $k \neq 0$</p>

10	<p>(a) 5.4 cao</p> <p>(b) 5</p> <p>(c) 50</p> <p>(d) 134</p> <p>(e) 301.5(0)</p>	<p>3</p> <p>2</p> <p>1ft</p> <p>3ft</p> <p>1ft</p>	<p>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</p> <p>M1 for $0.5 \times 5 \times 2$ oe</p> <p>$10 \times$ their (b)</p> <p>M2 for $2 \times$ their (b) + $10 \times$ their (a) + 2×10 + 5×10 or better M1 for any 3 faces correct</p> <p>Their (d) $\times 2.25$</p>
11	<p>(a) Correct shape drawn</p> <p>(b) 16, 21, 26</p> <p>(c) 41</p> <p>(d) $5n + 1$</p> <p>(e) 501</p> <p>(f) 13</p>	<p>1</p> <p>3</p> <p>1</p> <p>2</p> <p>1ft</p> <p>2ft</p>	<p>B1 for each SC1 “their 16” + 5 SC1 “their 21” + 5</p> <p>B1 for $5n$, B1 for +1</p> <p>Their (d) if linear</p> <p>Their (d) if linear B1 for their (d) = 66</p>

