



UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS  
International General Certificate of Secondary Education

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**CAMBRIDGE INTERNATIONAL MATHEMATICS**

**0607/04**

Paper 4 (Extended)

**For Examination from 2010**

SPECIMEN MARK SCHEME

**2 hours 15 minutes**

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**MAXIMUM MARK: 120**

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This document consists of **6** printed pages.



**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 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.
  - **C** marks are given for clear communication (Papers 5 and 6 only).
  - **R** marks are given for appropriate reasoning (Papers 5 and 6 only).
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- ft Follow through
  - oe Or equivalent
  - soi Seen or implied
  - www Without wrong working

1	(a)	112 (km/h)	M1A1	M1 for dist ÷ time seen
	(b) (i)	$0.9 \times 112$ $252 \div$ <i>their new speed</i> 11 20 ft	M1A1 M1 A1	(2.5 h)
	(ii)	$\frac{0.25}{2.25} \times 100$ oe 11.1 ft	M1 A1	
	(c)	5.9 km 2.19 (mins) ft	B1 M1 A1	M1 for <i>their</i> $5.9 \div 162 \times 60$ (not 5.5)  [11]
2	(a)	0.5 or $\frac{1}{2}$	B1	
	(b)	-1.5	M1 A1	M1 for $5 = 2(1 - x)$ or diagram of correct graph(s) which would give answer without need for more graphs
	(c)	$y = \frac{5}{1-x}$ $y(1-x) = 5$ $y - 5 = xy$ $\frac{y-5}{y} = x$ $(f^{-1}(x)) = \frac{x-5}{x}$	M1 M1 M1 A1	Alternative methods $x = \frac{5}{1-y}$ M1 first step $\frac{5}{x}$ M2 $x(1-y) = 5$ M1 $x - 5 = xy$ M1 then $1 - \frac{5}{x}$ A2 $\frac{x-5}{x} (= y)$ A1  [7]
3	(a) (i)	(5, -7)	B1	
	(ii)	Reflection in line $y = x$	B3	If B0, M1 for showing the reflection correctly oe M1 (depend) for showing rotation of first image correctly oe
	(b)	$c = 2d$ oe $2c + 3d = 21$ $7d = 21$ $c = 6, d = 3$	M1 A1 M1 A1	Setting up two equations  (depend) for correctly eliminating one variable  [8]

4	(a)	(i)	116°	B2	B1 for right-angle soi at $A$ or $B$
		(ii)	32° ft	B2	If B0, M1 for $0.5(180 - \text{their } 116)$ o.e. seen
		(iii)	61° ft	B2	B1 for angle $ADB = \frac{1}{2}$ of <i>their</i> 116 seen
		(iv)	7° ft	B2	B1 for angle $DAX = 80 - \frac{1}{2}$ of <i>their</i> 116
	(b)		Opposite angles of a cyclic quadrilateral add up to 180	E1	
<b>[9]</b>					
5	(a)		-0.32, 1.19	M2 A2	SC3 for correct answers but to more than 2 dp M2 for diagram of correct graph(s) which would give answer without need for more graphs or for $\frac{7 \pm \sqrt{49 - 4 \times 8 \times -3}}{2 \times 8}$ or $\frac{-7 \pm \sqrt{49 - 4 \times -8 \times 3}}{2 \times -8}$
	(b)		$-0.32 < x < 1.19$	B1	ft their solution to (a) – not just their answers to (a)
<b>[5]</b>					
6	(a)		$y = 2x + 2$	B3	Must include $y$ , otherwise B2 If B0, allow B1 for each correct part with $y =$ , i.e $2x$ or $2$
	(b)		Gradient = $-0.5$ ft Mid-point = $(1.5, 5)$ $5 = -0.5 \times 1.5 + c$ oe $y = -0.5x + 5.75$ oe $2x + 4y = 23$	B1 B1 M1 A1 B1	ft their gradient and their midpoint  ft from an equation form with three terms
<b>[8]</b>					
7	(a)		5.63 (cm)	B2	If B0, M1 for $12\sin 28^\circ$
	(b)		$BC = 12\cos 28^\circ$	M1	
			Area of one end = $0.5 \times \text{their } AB \times \text{their } BC$	M1	
			Area of rectangles $12 \times 30$ $\text{their } AB \times 30$ $\text{their } BC \times 30$	M1	for any one
			2 triangles + 3 rectangles $907 \text{ (cm}^2\text{)}$	M1 A1	(906.5.....)
<b>[7]</b>					

<b>8</b>	<b>(a)</b>	5	M1 A1	M1 for $\sqrt{4^2 + 3^2}$
	<b>(b)</b>	78.54	M1 A1 A1	M1 for $\pi \times (\text{their}(a))^2$ A1 for correct answer not to 2 dp (must be at least 1 dp)
	<b>(c) (i)</b>	$(-1, 5), (-1, -1),$ $(7, -1)$	B2	B1 if two points correct
	<b>(ii)</b>	48	B1 B1	Correct lengths soi
<b>[9]</b>				
<b>9</b>	<b>(a)</b>	Each correct shape	B1B1 B1B1	Correct position with respect to axes.       one each
	<b>(b)</b>	$(-2, 0)$ $(2, 0)$ $(0, 4)$	B1 B1 B1	
	<b>(c)</b>	$(0, -1.5)$	B1	
	<b>(d)</b>	$(0.816, -2.59)$	B1,B1	
	<b>(e) (i)</b>	1.7(0)	B1	
	<b>(ii)</b>	1.8(0)	B1	
	<b>(iii)</b>	$\pm 2.45, \pm 1.41$	B4	
<b>(f)</b>	4	B1	<b>[17]</b>	
<b>10</b>	<b>(a) (i)</b>	$A \cap B$	B1	allow $(A \cap B)'$  B1 for 8 or 4 in the appropriate region
	<b>(ii)</b>	$B \cup A'$	B1	
	<b>(b) (i)</b>	6	B2	
	<b>(ii)</b>	1	B1	
	<b>(iii)</b>	$\frac{8}{24}$ oe	B1	
	<b>(iv)</b>	$\frac{3}{24} \times \frac{2}{23}$ $\frac{6}{552}$ oe	M1 A1 A1	
	<b>(v)</b>	$\frac{3}{6} \times \frac{2}{5} = \frac{6}{30}$ oe	M1 A1	
<b>(vi)</b>	5	B2	B1 for 17 seen or correct shading  <b>[13]</b>	

<b>11</b>	<b>(a)</b>	<b>(i)</b>	65.5	B1	P2 for 9 points, P1 for 8
		<b>(ii)</b>	51.5	B1	
	<b>(b)</b>	<b>(i)</b>	67.5	B1	
		<b>(ii)</b>	50	B1	
	<b>(c)</b>	<b>(i)</b>	25	B1	
		<b>(ii)</b>	15	B1	
	<b>(d)</b>		Maths higher average Maths higher spread	B1 B1	
	<b>(e)</b>	<b>(i)</b>	10 points correctly plotted	P3	
		<b>(ii)</b>	Line through $(\bar{x}, \bar{y})$ Ruled and reasonable	M1 A1	
	<b>(f)</b>		Negative o.e Strong o.e.	M1 A1	
<b>(g)</b>	<b>(i)</b>	$(y =) -0.548x + 87.4$	B1,B1		
	<b>(ii)</b>	53	B1		
					<b>[18]</b>
<b>12</b>	<b>(a)</b>		$(\cos P) = \frac{11^2 + 21^2 - 13^2}{2 \times 11 \times 21}$	M1 A1	Using the Cosine Rule. Correct substitution.
			(angle $P$ ) = $31.7^\circ$	A1	
	<b>(b)</b>		Bearing = $70 + 31.7 = 101.7^\circ$ $11 + 1.5 \times 20$ and $21 + 1.5 \times 15$ $(AB^2 =) 41^2 + 43.5^2 - 2 \times 41 \times 43.5$ $\cos 31.7^\circ$ 23.2 (km)	E1 M1 A1 M1 A1	(dependent)  ft their $PA, PB$ (538.4.....)
					<b>[8]</b>