UNIVERSITY OF CAMBRIDGE INTERNATIONAL EXAMINATIONS
International General Certificate of Secondary Education

CAMBRIDGE INTERNATIONAL MATHEMATICS **0607/04**

Paper 4 (Extended) **For Examination from 2010**

SPECIMEN MARK SCHEME

2 hours 15 minutes

MAXIMUM MARK: 120

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).

- 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 × 112 252 ÷ *their new speed* 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 *their 5.9* ÷ 162 x 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* o.
		(ii)	32° ft	B2	If B0, M1 for 0.5(180 – their ; o.e. seen
		(iii)	61° ft	B2	B1 for angle *ADB* = ½ of *their 116* seen
		(iv)	7° ft	B2	B1 for angle *DAX* = 80 – ½ of *their 116*
	(b)		Opposite angles of a cyclic quadrilateral add up to 180	E1	**[9]**
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)** **[5]**
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 **[8]**
7	**(a)**		5.63 (cm)	B2	If B0, M1 for 12sin28°
	(b)		*BC* = 12cos28° Area of one end = 0.5 × *theirAB* × *theirBC* Area of rectangles 12 × 30 *theirAB* × 30 *theirBC* × 30 2 triangles + 3 rectangles 907 (cm^2)	M1 M1 M1 M1 M1 A1	for any one (906.5……..) **[7]**

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

11	**(a)**	**(i)**	65.5	B1	
		(ii)	51.5	B1	
	(b)	**(i)**	67.5	B1	
		(ii)	50	B1	
	(c)	**(i)**	25	B1	
		(ii)	15	B1	
	(d)		Maths higher average Maths higher spread	B1 B1	
	(e)	**(i)**	10 points correctly plotted	P3	P2 for 9 points, P1 for 8
		(ii)	Line through $(\bar{x}, \bar{y})$ Ruled and reasonable	M1 A1	
	(f)		Negative o.e Strong o.e.	M1 A1	
	(g)	**(i)**	$(y =) -0.548x + 87.4$	B1,B1	
		(ii)	53	B1	Allow 52.9 **[18]**
12	**(a)**		$(\cos P) = \dfrac{11^2 + 21^2 - 13^2}{2 \times 11 \times 21}$	M1 A1	Using the Cosine Rule. Correct substitution.
			(angle P) = 31.7°	A1	
			Bearing = 70 + 31.7 = 101.7°	E1	(dependent)
	(b)		11 + 1.5 × 20 and 21 + 1.5 × 15	M1 A1	
			$(AB^2 =)\ 41^2 + 43.5^2 - 2 \times 41 \times 43.5$ cos 31.7°	M1	ft their PA, PB (538.4……)
			23.2 (km)	A1	**[8]**