## MARK SCHEME for the October/November 2010 question paper

## for the guidance of teachers

## 0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/02 Paper 2 (Extended), maximum raw mark 40

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.

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(b) 3 B1 [3] 2 $c(2a-5b)+3(2a-5b) \text{ or } 2a(c+3)-5b(c+3)$ ( $2a-5b)(c+3$ ) WWW2 [2] 3 $\frac{a-1}{6-2} = \frac{3}{2}$ oe For correctly setting out the gradient $2a-2=12$ For a correct method to eliminate the fractions from a correct equation $a=7$ WWW3 B1 $a=7$ [3] 4 (a) 45 B1 (b) 25 B2 If B0 award B1 for 30 or 55 scen and not spoilt by use of 150 and/or 50 (c) 34 to 36 inclusive B2 If B0 award B1 for 128 to 132 inclusive seen [5] 5 (a) $x^2y$ oc B1 (b) $4xy + 2x^2$ oe B2 B1 for $2x^2$ , B1 for $4xy$ [3] 6 (a) $y = \frac{3}{2}210^{\circ}$ P1 A and B must be labelled correctly, with A between South and West [5] 6 (a) $y = 25$ A1			<b>—</b>		
2 $c(2a-5b)+3(2a-5b) \text{ or } 2a(c+3)-5b(c+3)$ (2a-5b)(c+3) WWW2 $A13 \frac{a-1}{6-2} = \frac{3}{2} oc For correctly setting out the gradient 2a-2 = 12 For a correct method to eliminate the fractions from a correct equation a=7 WWW3 A14 (a) 45 B1(b) 25 B2 If B0 award B1 for 30 or 55 seen and not spoilt by use of 150 and/or 50 If B0 award B1 for 128 to 132 inclusive seen [5]5 (a) x^2y oe B1(b) 4xy + 2x^2 oc B2 B1 B1 B1 B1 B1 B1 B1 B1 B1$	1	(a)	$5\sqrt{3}$	B2	Award M1 for evidence of $\sqrt{25 \times 3}$
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$		(b)	3	B1	[3]
3 $\frac{a-1}{6-2} = \frac{3}{2}$ or For correctly setting out the gradientM1Alternative solution $y = \frac{3}{2}x-2$ 3 $\frac{a-1}{6-2} = \frac{3}{2}$ or For correctly setting out the gradientM1 $\frac{Alternative solution}{y} = \frac{3}{2}x-2$ $2a-2 = 12$ For a correct method to climinate the fractions from a correct equation $a=7$ M1 $a = \frac{3}{2} \times 6 - 2$ For substituting $a$ and $6$ correctly4(a)45B1(b)25B2If B0 award B1 for 30 or 55 seen and not spoilt by use of 150 and/or 505(a) $x^2y$ oeB1(b) $4xy + 2x^2$ oeB2B1 for $2x^2$ , B1 for $4xy$ 6(a) $N$ P1 $A$ and $B$ must be labelled correctly, with $A$ between South and West(b)50sin30 seen oeM1Allow implicit form If scale drawing used then M0	2			M1	
the gradient 2a - 2 = 12 For a correct method to climinate the fractions from a correct equation a = 7 www3 <b>A</b> 1 a = 7 <b>A</b> 1 a = 7 <b>B</b> 2 <b>B</b> 1 <b>B</b> 1 <b>B</b> 2 <b>B</b> 1 <b>B</b> 2 <b>B</b> 1 f B0 award B1 for 30 or 55 seen and not spoilt by use of 150 and/or 50 <b>B</b> 2 <b>B</b> 2 <b>B</b> 1 f B0 award B1 for 128 to 132 inclusive seen <b>B</b> 2 <b>B</b> 1 for $2x^2$ , B1 for $4xy$ <b>B</b> 2 <b>B</b> 1 for $2x^2$ , B1 for $4xy$ <b>B</b> 3 <b>B</b> 3				A1	[2]
correctly correctly a = 7 www3 (a) 45 (b) 25 (c) 34 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 32 inclusive (c) 31 to 36 inclusive (c) 32 inclusive (c) 34 to 36 inclusive (c) 41 to 37 t	3			M1	
www3If B0 award B1 for 30 or 55 seen and not spoilt by use of 150 and/or 50(b)25B2If B0 award B1 for 30 or 55 seen and not spoilt by use of 150 and/or 50(c)34 to 36 inclusiveB2If B0 award B1 for 128 to 132 inclusive seen(b) $4xy + 2x^2$ oeB1(b) $4xy + 2x^2$ oeB2(c)A and B must be labelled correctly, with A between South and West(b) $50sin30$ seen oeM1 $25$ A1			eliminate the fractions from a correct	M1	2
(b)25B2If B0 award B1 for 30 or 55 seen and not spoilt by use of 150 and/or 50(c)34 to 36 inclusiveB2If B0 award B1 for 128 to 132 inclusive seen5(a) $x^2y$ oeB1(b) $4xy + 2x^2$ oeB16(a)NP1A and B must be labelled correctly, with A between South and West(b)50sin30 seen oeM1Allow implicit form If scale drawing used then M0				A1	<i>a</i> = 7 [3]
(c)34 to 36 inclusivespoilt by use of 150 and/or 50(c)34 to 36 inclusiveB2 $B2$ If B0 award B1 for 128 to 132 inclusive seen(b) $4xy + 2x^2$ oeB1(c) $4xy + 2x^2$ oeB2 $B1$ for $2x^2$ , B1 for $4xy$ [3](a) $M$ P1 $A$ and $B$ must be labelled correctly, with $A$ between South and West $A$	4	<b>(a)</b>	45	B1	
seenseen5 (a) $x^2y$ oeB1(b) $4xy + 2x^2$ oeB26 (a)N $B_1$ B2 $B_2$ B1 for $2x^2$ , B1 for $4xy$ $A$ and $B$ must be labelled correctly, with $A$ between South and West $A$ $A$ and $B$ must be labelled correctly, with $A$ between South and West $A$		(b)	25	B2	
5 (a) $x^2y$ oeB1(b) $4xy + 2x^2$ oeB2B1 for $2x^2$ , B1 for $4xy$ [3]6 (a)NP1A and B must be labelled correctly, with A between South and WestA(b) $50\sin 30$ seen oeM1Allow implicit form If scale drawing used then M0		(c)	34 to 36 inclusive	B2	
6 (a) N B 210° P1 A and B must be labelled correctly, with A between South and West (b) 50sin30 seen oe M1 Allow implicit form 25 A1	5	(a)	$x^2y$ oe	B1	
(b) $50\sin 30$ seen oe 25 $M1$ $Allow implicit form If scale drawing used then M0$		(b)	$4xy + 2x^2$ oe	B2	B1 for $2x^2$ , B1 for $4xy$ [3]
25 If scale drawing used then M0	6	(a)	B 210°	P1	
WWZ III		(b)			

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7		$2\binom{3}{-2} + k\binom{-2}{5} = \binom{-2}{16}$ oe	M1	For setting up equation
		6 - 2k = -2 or $-4 + 5k = 16$	M1	Implies first M1
		<i>k</i> = 4 www3	A1	[3]
8	(a)	13	B1	
	(b)	$3(2x-1)^2+1$ isw	B2	isw attempts to expand/simplify only. If B0 award M1 for $g(2x - 1)$ seen.
	(c)	$\frac{x+1}{2}$	B2	If B0 award M1 for $x = 2y - 1$ or $\frac{y+1}{2}$ or
				$\frac{\mathbf{f}(x)+1}{2}$
				[5]
9		For correct histogram with frequency density values of $k(2, 1, 0.5, 6, 2)$ where $k > 0$	Р3	Award P2 for one error, P1 for two errors, P0 otherwise, Or SC1 for correct frequency densities, Or SC2 for correct histogram with freq polygon superimposed. [3]
10	(a)	beach	B2	Award B1 for two correct values in correct positions, B0 otherwise
		sun 0.1 no beach		
		no sun 0.5 0.2		
		0.5 no beach		
	(b)	0.8 imes 0.9 + 0.2 imes 0.5	M1	SC1 for $0.8 \times 0.9$ (= 0.72) or
		0.82 www2	A1	$0.2 \times 0.5 (= 0.1)$ seen
		www2		[4]

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11	Two correct simultaneous equations e.g. two of $9a + 3b = 6$ , $a - b = 6$ , a + b = -2, $4a + 2b - 6 = -6$ oe	M1	Alternative Solution (y =) $a(x1)(x - 3)$ oe
	Correct method to eliminate one variable Condone one slip a = 2 and $b = -4$	M1dep	Correct substitution of values for x and y e.g. $-6 = a \times 1 \times -3$
	www3	A1	a = 2 and $b = -4$
			If M0 scored then SC2 for $(x1)(x - 3)$ oe seen and, $a = 2$ or $b = -4$
			[3]
12	D	B1	
	E	B1	
	Α	B1	
			[3]

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