

CAMBRIDGE INTERNATIONAL EXAMINATIONS

Cambridge International General Certificate of Secondary Education

MARK SCHEME for the October/November 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/63

Paper 6 (Extended), maximum raw mark 40

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A INVESTIGATION		THE END RESULT		
1	(a) (i)	$\frac{1}{12}$ oe	1	C opportunity
		$\frac{1}{12}$ oe	1	
	(ii)	$\frac{2}{15}$ oe	1	C opportunity
		$\frac{1}{15}$ oe	1	
	(iii)	Any correct pair	1	Any pair of fractions whose denominators are n and $n + 1$ for any integer $n > 0$ Not $\frac{1}{4}$ and $\frac{1}{5}$ Not $\frac{1}{3}$ and $\frac{1}{4}$
	(b) (i)	$\frac{b-a}{ab}$ oe	1	
	(ii)	$\frac{1}{ab}$ oe	1	
(c)	$\frac{1}{n+1}$	1		

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2	(a) (i)	$\frac{12}{35}$ oe	1	C opportunity
	(ii)	12, 35, 37 oe	1	C opportunity
	(iii)	$\frac{20}{99}$	1	C opportunity
	(iv)	Yes oe and correct reason	1FT	FT their $\frac{20}{99}$ e.g. $\sqrt{20^2 + 99^2} = 101$
	(b) (i)	$\frac{p+q}{pq}$ isw	1	
	(ii)	$p + q, pq, [pq + 2]$	1	
	(iii)	$(pq + 2)^2 = \text{their}(p + q)^2 + \text{their}(pq)^2$ $p^2q^2 + 4pq + 4 = p^2 + q^2 + 2pq + p^2q^2$ Correct further step leading to given answer	1 1 1	May be unsimplified
	(iv)	$q = p + 2$ oe $q = p - 2$ oe	1 1	
		Communication seen in at least two of 1a(i), 1a(ii), 2(a)(i), 2a(ii) or 2(a)(iii)	1	

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B MODELLING		RESCUE MISSION	
1	<p>(a) (i) Maximums are 10 and 20 and minimum in total is 80</p> <p>(ii) $5x + 7y \geq 35$</p> <p>(iii) $3x + 4y < 24$</p> <p>(b) (i) 7</p> <p>(ii) 5</p> <p>(c) $40x + 65y$</p>	<p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p> <p>1</p>	<p>If 0 scored in (i) and (ii), SC1 for 8 and 6</p>
2	<p>(a)</p> <p>Line from (0, 4) to (8, 0)</p> <p>Line from (0, 5) to (7, 0)</p> <p>Line from (0, 6) to (8, 0)</p> <p>Line $y = \text{their } 5$ and line $x = \text{their } 7$</p> <p>Correct region</p> <p>(b) [They are] fractions oe</p> <p>(c) $\frac{6}{305}$ $\frac{1}{305}$</p>	<p>1</p> <p>1FT</p> <p>1FT</p> <p>1FT</p> <p>1</p> <p>1</p> <p>2</p>	<p>B1 for at least 2 correct C opportunity</p>
3	<p>3 3</p> <p>10</p>	<p>1</p>	
4	<p>Identify one solution using any valid comparison of time and cost.</p>	<p>1FT</p>	<p>e.g. An extra \$10 000 will reduce the time by one hour</p>

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5	<p>(a)</p> $5x + 7y + 4z \geq 35$ $10x + 20y + 8z \geq 80$ oe $3x + 4y + 2z < 24$ $0 \leq x \leq 7$ $0 \leq y \leq 5$ $0 \leq z \leq 11$ $40x + 65y + 50z$	2	<p>FT their x and y from 1(b)</p> <p>B1 for any 5 correct</p>
	<p>(b)</p> <p>e.g. [The graph used in part 2 is] 2 [dimensional; the problem is now] 3 [dimensional]. oe www</p>	1	<p>2 not 3 variables All statements must be valid</p>
	Communication in 2(c)	1	