

MARK SCHEME for the May/June 2014 series

0607 CAMBRIDGE INTERNATIONAL MATHEMATICS

0607/62

Paper 6 (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.

Mark schemes should be read in conjunction with the question paper and the Principal Examiner Report for Teachers.

Cambridge will not enter into discussions about these mark schemes.

Cambridge is publishing the mark schemes for the May/June 2014 series for most IGCSE, GCE Advanced Level and Advanced Subsidiary Level components and some Ordinary Level components.

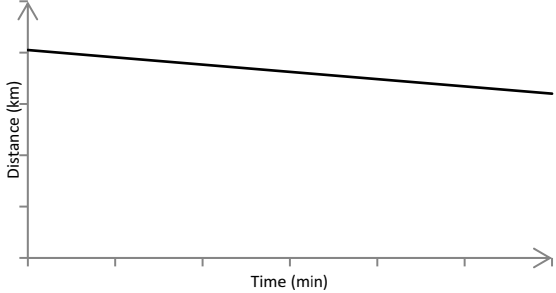
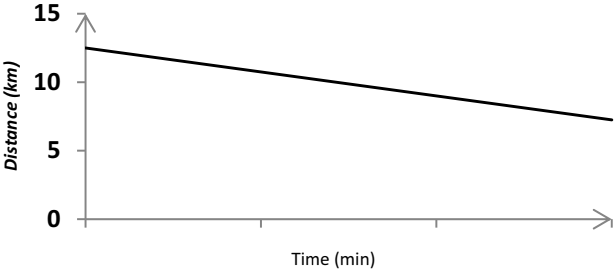
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A INVESTIGATION FRACTIONS WITHIN FRACTIONS												
1	(a)	$\frac{1}{1+\frac{2}{3}}$ seen	1	C opportunity								
	(b)	$\frac{1}{1+\frac{3}{5}}$ seen	1									
	(c)	<table border="1" style="display: inline-table; border-collapse: collapse; text-align: center;"> <tr> <td>$\frac{1}{1}$</td> <td>$\frac{1}{2}$</td> <td>$\frac{2}{3}$</td> <td>$\frac{3}{5}$</td> <td>$\frac{5}{8}$</td> <td>$\frac{8}{13}$</td> <td>$\frac{13}{21}$</td> <td>$\frac{21}{34}$</td> </tr> </table>	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{5}$	$\frac{5}{8}$	$\frac{8}{13}$	$\frac{13}{21}$	$\frac{21}{34}$	2	B1 each
	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{5}$	$\frac{5}{8}$	$\frac{8}{13}$	$\frac{13}{21}$	$\frac{21}{34}$				
(d)	<p>[Numerator =] denominator of 7th or previous fraction or added the two previous numerators oe or denominator of (previous term + 1) oe</p> <p>[Denominator =] numerator + denominator of 7th or previous fraction</p> <p>or added the two previous denominators oe or numerator of (previous term + 1) oe</p>	2	B1 each									
2	(a)	$\frac{10}{11}$ $\frac{22}{21}$	2	B1 each FT <i>their</i> $\frac{10}{11}$ C opportunity								
	(b)	<p>[Numerator =] 2 × previous denominator or 2 × 11 = 22 or previous numerator + 2 × numerator before previous numerator.</p> <p>[Denominator =] numerator + denominator of previous fraction or 10 + 11 = 21 or previous denominator + 2 × denominator before previous denominator.</p>	2	B1 each								

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3	(a) (i)	$x(1+x) = 1$ seen	1																	
	(ii)	0.618[0...]	1	C opportunity																
	(iii)	<table border="1"> <tr> <td>$\frac{1}{1}$</td> <td>$\frac{1}{2}$</td> <td>$\frac{2}{3}$</td> <td>$\frac{3}{5}$</td> <td>$\frac{5}{8}$</td> <td>$\frac{8}{13}$</td> <td>$\frac{13}{21}$</td> <td>$\frac{21}{34}$</td> </tr> <tr> <td>1</td> <td>0.5</td> <td>0.667</td> <td>0.6</td> <td>0.625</td> <td>0.615 or 0.6153 to 0.6154</td> <td>0.619</td> <td>0.618 or 0.6176[...]</td> </tr> </table>	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{5}$	$\frac{5}{8}$	$\frac{8}{13}$	$\frac{13}{21}$	$\frac{21}{34}$	1	0.5	0.667	0.6	0.625	0.615 or 0.6153 to 0.6154	0.619	0.618 or 0.6176[...]	1FT	FT their 1 (c)
	$\frac{1}{1}$	$\frac{1}{2}$	$\frac{2}{3}$	$\frac{3}{5}$	$\frac{5}{8}$	$\frac{8}{13}$	$\frac{13}{21}$	$\frac{21}{34}$												
	1	0.5	0.667	0.6	0.625	0.615 or 0.6153 to 0.6154	0.619	0.618 or 0.6176[...]												
	(b) (i)	<table border="1"> <tr> <td>$\frac{2}{1}$</td> <td>$\frac{2}{3}$</td> <td>$\frac{6}{5}$</td> <td>$\frac{10}{11}$</td> <td>$\frac{22}{21}$</td> <td>$\frac{42}{43}$</td> <td>$\frac{86}{85}$</td> </tr> <tr> <td>2</td> <td>0.667</td> <td>1.2</td> <td>0.909 or 0.9090 to 0.9091</td> <td>1.048 or 1.0476[...]</td> <td>0.977</td> <td>1.012</td> </tr> </table>	$\frac{2}{1}$	$\frac{2}{3}$	$\frac{6}{5}$	$\frac{10}{11}$	$\frac{22}{21}$	$\frac{42}{43}$	$\frac{86}{85}$	2	0.667	1.2	0.909 or 0.9090 to 0.9091	1.048 or 1.0476[...]	0.977	1.012	1FT	FT their 2 (a)		
	$\frac{2}{1}$	$\frac{2}{3}$	$\frac{6}{5}$	$\frac{10}{11}$	$\frac{22}{21}$	$\frac{42}{43}$	$\frac{86}{85}$													
	2	0.667	1.2	0.909 or 0.9090 to 0.9091	1.048 or 1.0476[...]	0.977	1.012													
	(ii)	$[x =] 1$	1	C opportunity																
	(iii)	The decimals in part (i) are getting closer to the answer in part (ii) oe	1																	
(c) (i)	$\frac{-1+\sqrt{1+4N}}{2}$ oe	1																		
(ii)	Any three of $[N =] 2, 6, 12, 20, 30, 42, \text{etc.}$	1	C opportunity																	
	Communication seen in 3 or more of 1(b), 2(a), 3(a)(ii), 3(b)(ii), 3(c)(ii)	2	C1 for two																	

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B MODELLING		FITNESS TRAINING	
1	(a) $1.5 \div \frac{20}{60}$ oe	1	
	(b) 18	1	C opportunity
	(c) [Day] 5	1	
2	2.7 [km] or 2700 m	1	C opportunity
3	(a) $[D =] \frac{6.4x}{60} + 8.1 \left(1 - \frac{x}{60}\right)$ or $\frac{6.4x}{60} + 8.1 \left(\frac{60-x}{60}\right)$ or $\frac{6.4x + 8.1(60-x)}{60}$ or $\frac{6.4x}{60} + \frac{8.1}{60}(60-x)$ soi	1	
	(b) $[D =] \frac{6.4x + 486 - 8.1x}{60}$ oe	1	dep. on 3(a)
	(c) 	1	B1 Correct line approximately with negative gradient
	(d) 7.25 [km]	1	C opportunity
	(e) 12.5 [km/h]	1	C opportunity
	(f) (i) $[D =] \frac{6.4x}{60} + \frac{8.1y}{60} + 12.5 \left(1 - \frac{x}{60} - \frac{y}{60}\right)$ oe isw	1FT	FT <i>their</i> (e)
	(ii) $[D =] \frac{1}{60} (6.4x + 8.1y + 750 - 12.5x - 12.5y)$ soi www	1	dep on (f)(i)
	(g) (i) $[D =] \frac{1}{60} (750 - 6.1n - 4.4n)$ oe isw	1	If 0 scored then FT <i>their</i> correct (f)(i)
	(ii) 	2	B1 for line from 12.5 with negative gradient B1 dependent for (30, 7.25)

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(iii)	Running or No walking and/or jogging	1	B1 for each
(iv)	No running or Walking and/or jogging	1	
(v)	$D = \frac{1}{60} (486H - 1.7x) \text{ or } \frac{6.4x}{60} + 8.1 \left(H - \frac{x}{60} \right) \text{ oe}$ $D = \frac{1}{60} (750H - 6.1x - 4.4y) \text{ or}$ $\frac{6.4x}{60} + \frac{8.1y}{60} + 12.5 \left(H - \frac{x}{60} - \frac{y}{60} \right) \text{ oe}$	2	
	Communication seen in 3 from 1(b), 2, 3(d), 3(e)	C2	C1 for one