TAKE 10 ... ALGEBRAIC FRACTIONS

JustMaths

Q1.

Question	Working	Answer	Mark	Notes
(a)	$\frac{2(y-6)}{(y-6)(y-2)}$	$\frac{2}{y-2}$	3	M1 $2(y-6)$ M1 $(y-6)(y-2)$ A1 cao
(b)	$\frac{3(x+5)-(x-4)}{(x-4)(x+5)}$	$\frac{3(x+5)-(x-4)}{(x-4)(x+5)}$	2	M1 for $3(x+5)$ or $3x+15$ or $3x+5$ or $-(x-4)$ or $-x+4$ or $-x-4$ or $(x-4)(x+5)$ A1 for $\frac{3(x+5)-(x-4)}{(x-4)(x+5)}$ oe

Q2.

PAPER: 5MB2H_01					
Question		Working	Answer	Mark	Notes
			$\frac{3x}{x+4}$	3	M1 for $3x(x-2)$ M1 for $(x-2)(x+4)$ A1 cao

Q3.

Question		Working	Answer	Mark	Notes
		$\frac{2x^2-9x-5}{4x^3+2x^2}$ $\frac{(2x+1)(x-5)}{2x^2(2x+1)}$	$\frac{x-5}{2x^2}$	3	M1 for factorising the numerator correctly M1 for fully factorising the denominator correctly A1 for $\frac{x-5}{2x^2}$ oe eg. $\frac{-5+x}{2x^2}$

Q4.

Question		Working	Answer	Mark	
			$\frac{2x-1}{x-3}$	3	M1 for $(2x-1)(x+3)$ M1 for $(x-3)(x+3)$ A1 cao

Q5.

PAPER: 1MA0_1H					
Question		Working	Answer	Mark	Notes
	(a)		4	3	M1 for correct expansion to $32x-8$ or multiplying both sides by $3x$ or dividing both sides by 4 M1 for a compete and correct method to isolate the x terms and the number terms (condone one arithmetic error in multiplying out the bracket) A1 cao
	(b)	$\frac{2(y-6)-(y+3)}{(y+3)(y-6)}$	$\frac{y-15}{(y+3)(y-6)}$	3	M1 for common denominator of $(y+3)(y-6)$ M1 for $\frac{2(y-6)}{(y+3)(y-6)}-\frac{y+3}{(y+3)(y-6)}$ oe or $\frac{2(y-6)-(y+3)}{(y+3)(y-6)}$ oe A1 for $\frac{y-15}{(y+3)(y-6)}$ or $\frac{y-15}{y^2-3y-18}$

Q6.

	$\frac{x+27}{(x-3)(x+3)}$	3	M1 for denominator $(x-3)(x+3)$ **or** x^2-9 M1 for $\frac{5(x+3)}{(x-3)(x+3)}$ oe **or** $\frac{4(x-3)}{(x-3)(x+3)}$ oe (NB The denominator must be $(x-3)(x+3)$ or x^2-9 **or** another suitable common denominator) A1 for $\frac{x+27}{(x-3)(x+3)}$ **or** $\frac{x+27}{x^2-9}$

Q7.

	−0.75	4	M1 for correct method to clear fractions eg. multiply all terms by 6 M1 for expansion of brackets oe M1 (dep on M1) for isolating the terms in h **and** the constant terms A1 for −0.75 oe

Q8.

	$\frac{3x}{2x-5}$	M1	factorise $2x^2+x-15$ [= $(2x-5)(x+3)$] or $3x^2+9x$ [= $3x(x+3)$]
		M1	$\frac{1}{(2x-5)(x+3)} \times \frac{3x(x+3)}{1}$
		A1	cao

Q9.

Question	Answer	Mark	Mark scheme	Additional guidance
(a)	$\frac{4x-6}{3x-9}$	M1	factorises numerator of $4x^2-9$ eg $(2x-3)(2x+3)$ oe	$\frac{2x(2x-3)(2x+3)}{3x(2x+3)(x-3)}$
		M1	factorises denominator eg $x(x-3)$ or $3(2x+3)$ or for $3x(2x^2-3x-9)$	
		A1	cancels to give $\frac{4x-6}{3x-9}$	Accept $a=4$, $b=-6$, $c=3$, $d=-9$
(b)	$\frac{-x+8}{x(x+1)(x-2)}$	M1	method to use a common denominator eg $x(x+1)(x-2)$ by multiplying terms	Method must involve finding equivalents for all three separate terms; may be done in several stages.
		M1	deduce numerator eg $3x(x-2)+x(x+1)-4(x+1)(x-2)$	
		A1	oe	Equivalents must be algebraically equivalent and must have involved full simplification.

Q10.

Question	Answer	Mark	Mark scheme	Additional guidance
	$\frac{7x-13}{x-2}$	B1	for factorising eg $(x+5)(x-2)$	
		M1	for a method to divide $(x+5)$ by the algebraic fraction eg $(x+5)\times\frac{(x-1)}{x^2+3x-10}$	Condone incorrect factorising
		M1	for finding 2 fractions with a common denominator or a single fraction eg $\frac{6(x-2)}{x-2}+\frac{(x-1)}{x-2}$ **or** $\frac{6(x-2)+(x-1)}{x-2}$ **or** $\frac{6(x^2+3x-10)}{x^2+3x-10}+\frac{(x+5)(x-1)}{x^2+3x-10}$ **or** $\frac{6(x^2+3x-10)+(x+5)(x-1)}{x^2+3x-10}$	Condone incorrect factorising
		A1	$\frac{7x-13}{x-2}$	