



Changing the Subject of Formula

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1	11	$\frac{2cw-4w}{5}$ oe	3	M1 one correct move to clear fractions M1 second correct move to subtract term M1 third correct move dividing by 5 May be in any order
2	10	$x = \frac{3}{P-1}$	4	M1 for each of the four moves completed correctly
3	16	$\frac{5A}{r} - 2$ or $\frac{5A-2r}{r}$	3	M1 for correctly multiplying by 5 M1 for correctly dividing by r M1 for correct subtraction in any order
4	12	$x = +/- \sqrt{(5y)} - 3$ or $x = +/- \sqrt{5y} - 3$	3	M1 correct move of the 5 completed M1 correct move of the square completed M1 correct move of the 3 completed
5	3	$m = \frac{J}{v-u}$	2	M1 $m(v-u)$ seen
6	13	$10a + b$ or $a \times 10^1 + b (\times 10^0)$	2	M1 $[a \times 10^7 + b \times 10^6] \div 10^6$
7	16	$\frac{4h}{g^2}$ or $h\left(\frac{2}{g}\right)^2$	3	M1 squaring correctly M1 clearing denominator correctly M1 dividing by coefficient of i or SC2 for correct unsimplified expression
8	11	$\frac{4+bc}{c}$ or $\frac{4}{c} + b$ cao	3	M1 correct move completed M1 second correct move completed M1 third correct move completed
9	2	$(x=) 3(y-5)$ oe final answer	2	M1 for correct first move $y-5 = \frac{x}{3}$ or $3y = x + 15$ M1 for their correct second move
10	14	(a) 2.84 (b) $\frac{4\pi^2 l}{T^2}$ oe	2 3	M1 correct substitution of g and l seen M1 each correct move but third move marked on answer line
11	18	(a) 2.5×10^5 (b) $C = 1/(Lw^2)$	3 3	B2 250000 oe or M1 correct part value seen M1 each correct move
12	15	$p = \frac{c}{a-x}$	3	M1 one correct move M1 second correct move M1 third correct move marked on answer line

13	17	$w = \frac{4-3c}{c-1}$ www	4	M1 clearing denominator and removing brackets M1 correctly collecting terms in w on one side only M1 factorising correctly M1 divide by coefficient of w
14	9	$\frac{a(2-t)}{3}$ cao oe	3	M1 correct re-arrangement to isolate the term in w M1 correct multiplication by a M1 correct division by their 3 An incorrect answer scores a maximum of M2
15	16	$\frac{4y+2}{y-1}$ oe	4	M1 $xy - 4y = x + 2$ M1 collecting terms in x on one side M1 factorising M1 dividing by coeff of x
16	3	118.75 or $118\frac{3}{4}$ cao	2	M1 $3(20)^2 + 8(20)(-5) + 3(-5)^2$ or better
17	16	$\sqrt{\frac{\pi x^2 - A}{\pi}}$ oe	3	M1 for one correct move M1 for second correct move M1 for third correct move
18	20 (a)	$[\pm] 3.1623$ cao	2	M1 for $\sqrt{10}$ seen
	(b)	$\frac{4}{y^2-8}$ oe final answer	4	M1 first move completed correctly M1 second move completed correctly M1 third move completed correctly M1 final move completed correctly on answer line
19	10	$[\pm] \sqrt{c^2 - a^2}$ oe final answer	3	M1 for correct square M1 for correct re-arrangement M1 for correct square root
20	6	$[\pm] \sqrt{y-4}$ final answer	2	M1 for first move completed correctly M1 for second move completed correctly on answer line
21	7	$4 \pm \sqrt{y-6}$	3	M1 for <i>their</i> 6 moved correctly M1 for <i>their</i> $\sqrt{\quad}$ taken correctly M1 for <i>their</i> 4 moved correctly
22	10	(a) 35 (b) $\frac{3V}{A}$ or $3VA^{-1}$	1 2	M1 for multiplying by 3 or for dividing by $\frac{1}{3}$ or M1 for dividing by A

23	5	$v^3 - p$	2	M1 for $v^3 = p + r$
24	8	$8 + (y - 2)^2$ oe final answer	3	M1 for $y - 2 = \sqrt{x - 8}$ M1 for squaring both sides completed correctly M1 for adding <i>their</i> 8 completed correctly on answer line
25	13	$[\pm]\sqrt{\frac{y-b}{a}}$ oe final answer	3	M1 for correctly subtracting to isolate term in x^2 M1 for correct division M1 for the final stage of correctly finding the square root
26	16	$\frac{2(s-ut)}{t^2}$ oe final answer	3	M1 for correctly isolating term in a M1 for correctly multiplying by 2 (or -2) M1 for correctly dividing by t^2 (or $-t^2$)
27	8	$\frac{py}{q}$ final answer	2	M1 for one correct step
28	10	$p = \frac{8r-5}{r-3}$ oe final answer	3	M1 for correctly collecting terms in p on one side and terms not in p on the other side M1 for correct factorising M1 for correct division dependent on p appearing only once in a factorised expression Maximum M2 for an incorrect final answer
29	18 (a)	4	2	B1 for 25 or -21
	(b)	$\sqrt{y - qr}$ oe final answer	2	M1 for $y - qr = p^2$ or M1 for correctly square rooting <i>their</i> function of y , q and r
30	25(a)	$(x-12)(x+11)$ final answer	2	B1 for $(x+a)(x+b)$ where $ab = -132$ or $a + b = -1$
	25(b)	$x(x+2)(x-2)$ final answer	2	B1 for $x(x^2 - 4)$ or $(x+2)(x^2 - 2x)$ or $(x-2)(x^2 + 2x)$