Rearranging Solutions

Rearranging

Rearranging 1

1. $x = \frac{35}{3}$
2. $w = z - 3$
3. $x = \frac{2y+4}{5}$
4. $t = 6y$
5. $p = \pm\sqrt{\frac{y-2}{6}}$
6. $r = \sqrt{\frac{A}{\pi}}$
7. $Opp = Hyp \times sinx$
8. $\frac{5}{9}(F - 32) = C$

Rearranging 2

1. $x = y + b + f$
2. $y = \frac{(b+x^2)}{t}$
3. $c = \frac{m^2-d}{a}$
4. $a = \frac{d}{x} + e$
5. $y = 2b$
6. $s = \frac{v^2-u^2}{2a}$
7. $\theta = \frac{360A}{\pi r^2}$
8. $x = y - \frac{t}{m}$

Please note that there may be alternative correct expressions – check with your teacher

Line them up 1

$A\ (y + 2x = 1)$ $\quad$ $\boldsymbol{B\ (y = 2x + 5)}$ $\quad$ $\boldsymbol{C\ (2y + x + 5 = 0)}$

Line them up 2

$\boldsymbol{A\ (y + 3x + 4 = 0)}$ $\quad$ $\boldsymbol{B\ (y + 3x = 0)}$ $\quad$ $\boldsymbol{C\ (y = 4 - 3x)}$

$\boldsymbol{D\ (y = 3x + 4)}$ $\quad$ $\boldsymbol{E\ (y = 3x)}$ $\quad$ $\boldsymbol{F\ (y - 3x + 4 = 0)}$

Pairing up

Perpendicular lines

$\boldsymbol{4y = x + 3}$

$\boldsymbol{y + 4x + 6 = 0}$

Parallel Lines

$\boldsymbol{y = 4x + 4}$

$\boldsymbol{2y = 8x + 3}$

Same x-intercept

$\boldsymbol{2y + x = 4}$

$\boldsymbol{3y = 2x - 8}$

Same y-intercept

$\boldsymbol{2y + 8 = 3x}$

$\boldsymbol{y = 6x - 4}$

Go through (1,5)

$\boldsymbol{y = 8x - 3}$

$y + 6x = 11$

These are..the same line

$\boldsymbol{y + x + 8 = 0}$

$\boldsymbol{y = -(x + 8)}$

Pipe Problem $\boldsymbol{r = \frac{h}{\sqrt{2}-1}}$

Rearranging Solutions

Rearranging Functions -

1. $f^{-1}(x) = \frac{x+5}{3}$
2. $f^{-1}(x) = \frac{x-7}{4}$
3. $f^{-1}(x) = 2(x-1)$
4. $f^{-1}(x) = 3x-2$
5. $f^{-1}(x) = \dfrac{3(x-3)}{2}$
6. $f^{-1}(x) = \dfrac{3-x}{2}$

Rearranging Factorising

Rearranging Factorising 1

1. $-\left(\frac{4}{3}\right)$	2. $y = \frac{A}{x-2}$	3. $x = \frac{z+y}{a-b}$	4. $b = \frac{6+5p}{5-2x}$
5. $No, \times$ $by\ f\ first$	6. $a = \frac{3x+5t}{2}$	7. $x = \frac{ay}{3+b}$	8. $x = \frac{4}{\pi^2} - t$

Rearranging Factorising 2

1. $y = \frac{1}{x+k}$	2. $A = xy - x^2 - 2y + 2x$	3. $y = \frac{2x-x^2-A}{(2-x)}$	4. $y = \frac{4}{2x-1}$
5. $\frac{2s-2ut}{t^2}$	6. $y = \pm\sqrt{\frac{D^2+x}{b}}$	7. $h = \frac{a+b}{2A}$	8. $t = \frac{xb-ba}{b-x}$

Equivalent Quadratics

x^2-25 $(x+5)(x-5)$ $(x+5)^2-10x-50$ $(x+5)(x+6)-x+5$	$2x^2-2$ $2(x^2-1)$ $2(x+1)(x-1)$ $2(x+1)^2-4(x+4)$	$2(x+3)(x-1)$ $2(x+2)^2-4x-14$ $2x^2+4x-6$ $2(x+1)^2-8$	$(x+5)(x+6)-x-55$ $(x+5)^2-50$ $(x+5)(x-5)+10x$ $x^2+10x-25$

Rearranging Solutions

Mean Squares

Mean of two positive numbers then squared $\frac{x^2+y^2+2xy}{4}$

Mean of squares $\frac{x^2+y^2}{2}$

Difference between means $\frac{(x-y)^2}{4}$ $\textit{which must be positive as the numerator is squared}$

Difference of numeric squares

Problem 1 $18\ x\ 12\ \textit{can be written as}\ (15+3)(15-3) = 15^2 - 3^2 = 216$

Problem 2 - $3\ \times 4 = 12\ \ \textit{or}\ (3.5-0.5)(3.5+0.5) = 12\ \textit{so}\ 3.5^2 = 12 + 0.5^2\ \textit{which is}\ 12.25$

Quadratic Formula ask your teacher for the full worked solution to this

Equations of Circles

$(x-4)^2 + (y-1)^2 = 36\ \textit{circle with centre}\ (4,1)\ \textit{and radius}\ 6$
$(x+3)^2 + (x-5)^2 = 42\ \textit{circle with centre}\ (-3,5)\ \textit{and radius}\ 7$

Rearranging Fractions

Rearranging Fractions 1

1. $time = \frac{distance}{speed}$
2. $a = \frac{xb}{y}$
3. $x = \frac{y}{tan\theta}$
4. $x = \frac{bc}{a}$
5. $a = \frac{h+k}{x}$
6. $x = \frac{b-ca}{c-1}$
7. $a = \frac{y-x}{x+y}$
8. $y = x(\sqrt{3} - \sqrt{2})$

Rearranging Fractions 2

1. $abc = x$
2. $e = \sqrt{\frac{y}{x}}$
3. $a = \frac{b-zy}{x}$
4. $v = \pm\sqrt{Cx + ta}$
5. $x = \frac{2}{6y-5}$
6. $x = \frac{a-3FY}{3F}$
7. $y = \frac{ma}{g^2-m}$
8. $h = \frac{(5x-3\pi)}{\pi}$

Rearranging Solutions

Wrong Steps

For each expression the wrong steps are indicated underneath

$c = \frac{3e^2}{d}$	$\frac{sinx}{4} = \frac{siny}{a}$	$\frac{T-a}{T+a} = \frac{x}{y}$	$a - \frac{b^2}{d} = ce$	$y + b = \frac{ay+e}{b}$
$A\ and\ C$	$B\ and\ E$	$B\ and\ E$	$A\ and\ D$	$B\ and\ E$

Can you prove it

$a = \frac{b}{b+c}$ $\frac{a}{1} = \frac{b}{b+c}$ $a(b+c) = b$ $ac = b - ab$ $b = \frac{ac}{1-a}$ $\frac{b}{c} = \frac{a}{1-a}$	$\frac{n(n-1)}{2} + \frac{n(n+1)}{2}$ $\frac{n^2 - n + n^2 + n}{2}$ $\frac{2n^2}{2}$ n^2 $therefore\ the\ starting\ is\ square$	$\frac{2x+3}{4} - \frac{3x-2}{3} + \frac{1}{6}$ $\frac{3(2x+3)}{12} - \frac{4(3x-2)}{12} + \frac{2}{12}$ $\frac{6x+9-12x+8+2}{12}$ $\frac{19-6x}{12}$

Missing Steps

$sin\theta = \frac{h}{b}\ so\ h = b\ sin\theta$

$Base = a$

$Area = \frac{1}{2} base \times perpendicular\ height\ \ which\ becomes\ \ A = \frac{1}{2} a \times bsin\theta\ \ or \frac{1}{2} absin\theta$