SOLVING EQUATIONS – STEP BY STEP

Remember your **GOAL** is to get either $X = \_\_\_\_\_$ or $\_\_\_\_\_ = X$. Take your time, show your steps.

What do you do if you have	Strategy	Example $\frac{3x+3}{4} - \frac{x}{3} = \frac{x-4}{6} - \frac{1}{3}$
FRACTIONS	• Multiply each term by the LCM of the denominators • Remember a big fraction line is like brackets	$\frac{3x \square 3}{4} - \frac{x}{3} \square \frac{x-4}{6} - \frac{1}{3}$
	• Simplify and get rid of the denominator	$\frac{(12)(3x+3)}{4} - \frac{(12)x}{3} = \frac{(12)(x-4)}{6} - \frac{(12)1}{3}$
		$(3x + 3) - x = (x - 4) - 1$
BRACKETS	• Expand, don't forget to multiply each term inside the brackets	$3(3x + 3) - 4x = 2(x - 4) - 4$
LIKE TERMS	• Collect Like terms if possible	$9x + 9 - 4x = 2x - 8 - 4$
X's ON BOTH SIDES	• Use ADDING or SUBTRACTING to get rid of one of the terms with an X	$5x + 9 = 2x - 12$
There are TERMS WITHOUT an X	• Use ADDING or SUBTRACTING to get rid of terms without an X	$3x + 9 = -12$
X is being multiplied by a COEFICIENT	• Use DIVIDING to get X by it self.	$3x = -21$

GOAL	X = _____ or _____ = X	x = -7 or -7 = x

Special Case

X is on the BOTTOM	• MULTIPLY both sides by X	$\frac{56}{x} \square 8$
	• Proceed as before	$56 = 8x$

Special Case

There are FRACTIONS OUTSIDE and INSIDE the BRACKETS	Distribute the fractions	$\frac{1}{3}\left(\frac{1}{2}x + \frac{2}{3}\right) + 7 = 8 + 4x$
	Proceed as before	$\frac{1}{6}x + \frac{2}{9} + 7 = 8 + 4x$