Solving Algebraic Equations

THE GOAL: GET ALL QUESTIONS REDUCED TO
$$X = A$$

EX: $X = 4$
     $B = -7$
     $N = 14$

A VARIABLE/ UNKNOWN
(POSITIVE 1 x)

AN INTEGER (CAN BE POSITIVE or NEGATIVE)

HOW TO SOLVE: ① WORK OUT WHAT to REMOVE to GET "x=..."
                   ② REMOVE it BY DOING THE REVERSE
                   ③ DO THAT to BOTH SIDES

$4x = 8$

* WE WANT to REMOVE the "4" SO THAT I AM LEFT WITH 1 "x" *

WE WANT to REMOVE THE "4"	To Remove Do the opposite so ÷4	Do it to Both Sides	Which is...	SOLVED
① $4x = 8$	② $4x = 8$ $\frac{÷4}{1}$	③ $4x = 8$ $\frac{÷4}{1} \frac{÷4}{2}$	④ $1x = 2$	⑤ $x = 2$

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$3x + 6 = 24$
$ -6 \quad -6$
$(6 + (-6) = 0)$

GOAL = MOVE/DO THINGS SO THAT I ONLY HAVE "X" ON ONE SIDE AND ONLY #'s ON the other

$3x = 18$
$÷3 \quad ÷3$

$\boxed{X = 6}$

ALGEBRA = USING LETTERS TO REPRESENT UNKNOWN
NUMBERS IN A MATH EXPRESSION/EQUATION

TO SOLVE AN EQUATION WE NEED TO **ISOLATE THE
VARIABLE** ON ONE SIDE OF THE EQUATION.

TO DO THIS, WE GET RID OF THE NUMBERS ON THAT
SIDE OF THE EQUATION BY DOING THE
OPPOSITE OPERATION.

WHEN WE SOLVE AN EQUATION USING ALGEBRA, WE
MUST **PRESERVE THE EQUALITY**

WHATEVER WE DO TO ONE SIDE OF THE EQUATION,
WE MUST DO TO THE OTHER SIDE, TOO

$$3x + 5 = 14$$

$$3x = 9$$

$$x = 3$$