book of...

SOLVING EQUATIONS

created by: Name

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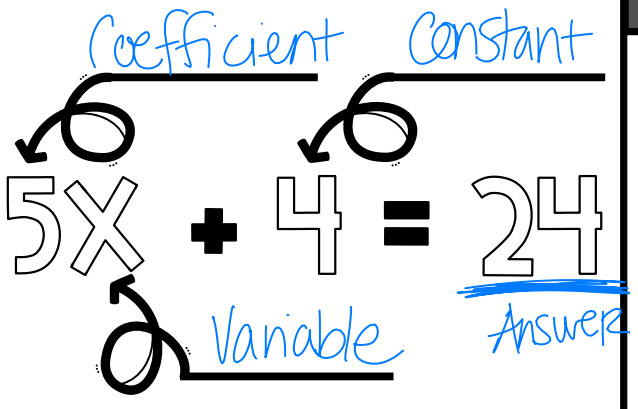
solving equations
vocabulary terms



variable: letters that represent a # (unknown #)

coefficient: # in front of variable

constant: # w/o variable plain naked #

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ONE STEP EQUATIONS

TO UNDO ADDITION → Subtraction

TO UNDO SUBTRACTION → ADDition

TO UNDO MULTIPLICATION → Division

TO UNDO DIVISION → Multiplication

Solve for the missing variables

ex 1 $X + 5 = 30$ $-5 \quad -5$ → $X = 25$

ex 2 $a - 10 = 12$ $+10 \quad +10$ → $a = 22$

ex 3 $\frac{5K}{5} = \frac{35}{5}$ → $K = 7$

ex 4 $3 \cdot \frac{B}{3} = 10 \cdot 3$ → $B = 30$

MULTI STEP EQUATIONS

STEP 1:	DISTRIBUTE
STEP 2:	COMBINE LIKE TERMS ON EACH SIDE.
STEP 3:	MOVE VARIABLES TO ONE SIDE.
STEP 4:	MOVE CONSTANTS TO THE OTHER SIDE.
STEP 5:	MULTIPLY BY DENOMINATOR OR DIVIDE BY THE COEFFICIENT.

Solve for the missing variables

ex 1 $\frac{3x}{4} + 4 = 10$

ex 2 $-2(-w + 2w - 3) = 36$

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EQUATIONS W/ VARIABLES ON BOTH SIDES

STEP 1:	MOVE THE SMALLER VARIABLE TO ONE SIDE.
STEP 2:	MOVE CONSTANTS TO THE OTHER SIDE.
STEP 3:	MULTIPLY BY DENOMINATOR OR DIVIDE BY THE COEFFICIENT.

SOLVE FOR THE MISSING VARIABLES

ex 1

$5K - 2 = 8K + 4$

$-5K \quad -5K$

$-2 = 3K + 4$

$-4 \quad -4$

$\frac{-6}{3} = \frac{3K}{3}$

$K = -2$

ex 2

$2W - 10 = 2W - 9$

$-2W \quad -2W$

$-10 = -9$

$-5 = 7$

No solution

ex 3

$4Z + 2 = 2 + 4Z$

$-4Z \quad -4Z$

$2 = 2$

$3 = 3$

$1000 = 1000$

same = same

Infinite solutions

MULTI-STEP EQUATIONS WITH VARIABLES ON BOTH SIDES

SOLVE FOR THE MISSING VARIABLES

ex 1

* need parentheses around more than 1 term

$\frac{X + 3}{X - 3} = \frac{2}{1}$ * Cross multiply

$(X+3) \cdot 1 = 2(X-3)$

$X + 3 = 2X - 6$

$-3 \quad -3$

$X = 2X - 9$

$-2X \quad -2X$

$-1X = -9$

$\frac{-1X}{-1} = \frac{-9}{-1}$

$X = 9$

ex 2

$\frac{1}{3}(3X - 12) + 5 = 2(X - 8) - X + 17$

$1X - 4 + 5 = 2X - 16 - X + 17$

$X + 1 = X + 1$

Same = Same

Infinite Solutions

TWO STEP EQUATIONS

STEP 1:	ADD OR SUBTRACT CONSTANT
STEP 2:	MULTIPLY OR DIVIDE BY COEFFICIENT

Solve for the missing variables

ex 1 $3X - 8 = 10$

$+8 \quad +8$

$\frac{3X}{3} = \frac{18}{3}$

$X = 6$

ex 2 $\frac{a}{4} - 10 = -12$

$+10 \quad +10$

$A = -8$

$4 \cdot \frac{A}{4} = -2 \cdot 4$

ex 3 $\frac{-4Z}{3} = 10 \cdot 3$

$-4Z = 30$

$\frac{-4Z}{-4} = \frac{30}{-4}$

$Z = -7.5$ OR $-\frac{15}{2}$

MULTI STEP EQUATIONS

STEP 1:	DISTRIBUTE
STEP 2:	COMBINE LIKE TERMS ON EACH SIDE.
STEP 3:	MOVE VARIABLES TO ONE SIDE.
STEP 4:	MOVE CONSTANTS TO THE OTHER SIDE.
STEP 5:	MULTIPLY BY DENOMINATOR OR DIVIDE BY THE COEFFICIENT.

Solve for the missing variables

ex 1 $\frac{3X}{4} + 4 = 10$

$-4 \quad -4$

$4 \cdot \frac{3x}{4} = 6 \cdot 4$

$\frac{3x}{3} = \frac{24}{3}$

$X = 8$

ex 2 $-2(-W + 2W - 3) = 30$

$2w - 4w + 6 = 30$

$-2w + 6 = 30$

$-6 \quad -6$

$\frac{-2w}{-2} = \frac{24}{-2}$

$w = -12$

ONE STEP EQUATIONS

TO UNDO ADDITION → _____

TO UNDO SUBTRACTION → _____

TO UNDO MULTIPLICATION → _____

TO UNDO DIVISION → _____

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Solve for the missing variables

ex 1 $X + 5 = 30$

ex 2 $a - 10 = 12$

ex 3 $5K = 35$

ex 4 $\frac{B}{3} = 10$