Date:_____

10.2 Notes: Solving Two Step Equations

What steps were done to "x" to turn it into "5x + 2"?

multiply   x   divide
             ⟍5x⟍
add   (   )   subtract.
             5x + 2
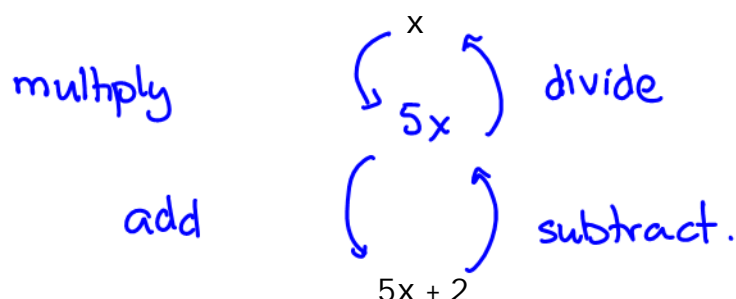
What steps do you think you would need to do to turn 5x + 2 back into an x ?

"isolate the variable"
① get rid of constant term
② get rid of coefficient.

Practice:

What steps are needed to turn each of the following back into x?

3x – 4	2x + 7	-5x + 2	$4 - 2x$
$+4$	-7	-2	-4
$\div 3$	$\div 2$	$\div -5$	$\div -2$

Solving Two Step Equations

Follow the reverse order of operations to isolate the variable on one side

Solving an equation means:
undo all steps and isolate your variable.

- use reverse order of operations.

$$x \quad = \quad 4$$

What steps were done to turn one line into the next line?

$$5x \quad = \quad 20$$

How would you go backwards and turn the last line back into the first line?

$$5x + 2 \quad = \quad 22$$

Examples: Solve each equation in two steps using reverse BEDMAS

$x + 4 = 7$	$3x - 2 = 13$	$5x + 2 = 27$
$\underline{-4 \quad -4}$	$\underline{+2 \quad +2}$	$\underline{-2 \quad -2}$
$x = 3$	$3x = 15$	$5x = 25$
	$\dfrac{3x}{3} = \dfrac{15}{3}$	$\dfrac{5x}{5} = \dfrac{25}{5}$
	$\boxed{x = 5}$	$\boxed{x = 5}$
$5x + 3 = 13$	$6x + 5 = 17$	$2x - 8 = 12$
$\underline{-3 \quad -3}$	$\underline{-5 \quad -5}$	$\underline{+8 \quad +8}$
$5x = 10$	$6x = 12$	$2x = 20$
$\dfrac{5x}{5} = \dfrac{10}{5}$	$\dfrac{6x}{6} = \dfrac{12}{6}$	$\dfrac{2x}{2} = \dfrac{20}{2}$
$\boxed{x = 2}$	$\boxed{x = 2}$	$\boxed{x = 10}$
~~$4x + 2 = 14$~~	~~$2x + 1 = 11$~~	~~$5x + 1 = 13$~~
$2 + 4x = 14$	$11 = -2x + 1$	$13 = 1 + 5x$
$\underline{-2 \qquad -2}$	$\underline{-1 \qquad -1}$	$\underline{-1 \quad -1}$
$4x = 12$	$10 = -2x$	$12 = 5x$
$\dfrac{4x}{4} = \dfrac{12}{4}$	$\dfrac{10}{-2} = \dfrac{-2x}{-2}$	$\dfrac{12}{5} = \dfrac{5x}{5}$
$\boxed{x = 3}$	$\boxed{-5 = x}$	$\boxed{2.4 = x}$

"isolate variable"   get rid of constant first

-x + 3 = 6

-3 -3
_____

-x = 3

Could skip

$\frac{-x}{-1} = \frac{3}{-1}$

$\boxed{x = -3}$

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7 – x = 2

-7   -7
_____

-x = -5

or

$\frac{-x}{-1} = \frac{-5}{-1}$

x = 5

$\boxed{x = 5}$

-4 + 3x = 11

+4   +4
_____

3x = 15

$\frac{3x}{3} = \frac{15}{3}$

$\boxed{x = 5}$

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4 – 2x = -2

-4   -4   -2 + -4
_____

-2x = -6

$\frac{-2x}{-2} = \frac{-6}{-2}$

$\boxed{x = 3}$

Anna is holding a dance, and charges everybody $5, except for Alvin, who gets a discount and is only charged $2. If she collected $587, how many people (other than Alvin) attended the dance? Make up an equation and solve, showing all work.

let x = people other than Alvin.

$5x + 2 = 587$

-2   -2
_____

$5x = 585$

$\frac{5x}{5} = \frac{585}{5}$

$\boxed{x = 117}$

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#3-5, 7, 9-18

quiz on two step equations on Monday.

there are 117 people other than Alvin.