Date:_____ KEY

10.2 Notes: Solving Two Step Equations

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

x

5x + 2

What steps do you think you would need to do to turn 5x + 2 back into an x ?

↳ ① subtract 2
  $5x + 2 - 2 = 5x$
  $\underbrace{\qquad}_{+ 0}$
② divide by 5

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

3x – 4
① add 4
② divide by 3

2x + 7
① subtract 7
② divide by 2

-5x + 2
① subtract 2
② divide by -5

Solving Two Step Equations

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

Solving an equation means:
finding the value of the variable(s)

x	=	4
×5		×5
5x	=	20
+2		+2
5x + 2	=	22

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

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

Examples: Solve each equation in two steps using reverse BEDMAS → "undo" what was done.

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

$-x + 3 = 6$
$-3 \quad -3$
$-x = 3$
$\frac{-x}{-1} \quad \frac{3}{-1}$
$\boxed{x = -3}$

$7 - x = 2 \longrightarrow$
$-7 \qquad -7$
$-x = -5$
$\frac{-x}{-1} \quad \frac{-5}{-1}$
$\boxed{x = 5}$

$7 - x = 2$
$7 + (-x) = 2$
$(-x) + 7 = 2$
$-x + 7 = 2$
$-7 \quad -7$
$\frac{-x}{-1} = \frac{-5}{-1}$
$\boxed{x = 5}$

$-4 + 3x = 11 \Rightarrow (-4) + 3x = 11$
$+4 \qquad +4$
$3x = 15$
$\frac{3x}{3} \quad \frac{15}{3}$
$\boxed{x = 5}$

$3x + (-4) = 11$
$3x - 4 = 11$
$+4 \quad +4$
$\frac{3x}{3} = \frac{15}{3}$
$\boxed{x = 5}$

$4 - 2x = -2 \Rightarrow 4 + (-2x) = -2$
$-4 \qquad -4$
$-2x = -6$
$\frac{-2x}{-2} \quad \frac{-6}{-2}$
$\boxed{x = 3}$

$(-2x) + 4 = -2$
$-2x + 4 = -2$
$-4 \quad -4$
$\frac{-2x}{-2} = \frac{-6}{-2}$
$\boxed{x = 3}$

Anna is holding a dance, and charges everybody \$5, except for Alvin, who gets a discount and is only charged \$2. If she collected ~~\$88~~ \$87, how <u>many people (other than Alvin)</u> <u>attended the dance?</u> Make up an equation and solve, showing all work.

LET p BE THE NUMBER OF PEOPLE (OTHER THAN ALVIN) WHO
"THEREFORE" ATTENDED THE DANCE

$\therefore$ $5p$ IS THE NUMBER OF DOLLARS COLLECTED FROM
ATTENDEES (OTHER THAN ALVIN)

$\therefore \quad 5p + 2 = 87$
$\qquad\quad - 2 \qquad - 2$
$\qquad \frac{5p}{5} = \frac{85}{5}$
$\qquad \boxed{p = 17}$