

# Math8 Lesson 10.2

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Date: \_\_\_\_\_

## 10.2 Notes: Solving Two Step Equations

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

x  
multiply by 5  
then  
add 2  
5x + 2

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

subtract 2  
and then  
÷ 5

Practice:

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

3x - 4  
add 4  
then  
÷ 3

2x + 7  
subtract 7  
÷ 2

-5x + 2  
subtract 2  
÷ -5

### Solving Two Step Equations

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

Solving an equation means: finding out all values of x that make the 2 expressions equal.

$$\begin{array}{rcl} x & = & 4 \\ \downarrow \times 5 & & \downarrow \times 5 \\ 5x & = & 20 \\ \downarrow + 2 & & \downarrow + 2 \\ 5x + 2 & = & 22 \end{array}$$

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

\*get rid of constant terms first\*

$x + 4 = 7$ $\cancel{-4} \quad \cancel{-4}$ $x = 3$	$3x - 2 = 13$ $\cancel{+2} \quad \cancel{+2}$ $\frac{3x}{3} = \frac{15}{3}$ $x = 5$	$5x + 2 = 27$ $\cancel{-2} \quad \cancel{-2}$ $5x = 25$ $\div 5 \quad \div 5$ $x = 5$
$5x + 3 = 13$ $\cancel{-3} \quad \cancel{-3}$ $5x = 10$ $\div 5 \quad \div 5$ $x = 2$	$6x + 5 = 17$ $\cancel{-5} \quad \cancel{-5}$ $\frac{6x}{6} = \frac{12}{6}$ $x = 2$	$2x - 8 = 12$ $\cancel{+8} \quad \cancel{+8}$ $\frac{2x}{2} = \frac{20}{2}$ $x = 10$
$4x + 2 = 14$ $\cancel{-2} \quad \cancel{-2}$ $\frac{4x}{4} = \frac{12}{4}$ $x = 3$	$-2x + 1 = 11$ $\cancel{-1} \quad \cancel{-1}$ $-2x = 10$ $\div -2 \quad \div -2$ $x = -5$	$5x + 1 = 13$ $\cancel{-1} \quad \cancel{-1}$ $\frac{5x}{5} = \frac{12}{5}$ $x = 2\frac{2}{5}$ <p style="text-align: right;">or 2.4</p>

$\begin{array}{r} -x + 3 = 6 \\ -3 \quad -3 \\ \hline -x = 3 \\ -1x = 3 \\ \frac{-1x}{-1} = \frac{3}{-1} \\ x = -3 \end{array}$	$\begin{array}{r} -x = 2 \\ -1 \quad -1 \\ \hline -x = -5 \\ \div -1 \quad \div -1 \\ x = 5 \end{array}$
$\begin{array}{r} -4 + 3x = 11 \\ +4 \quad +4 \\ \hline 3x = 15 \\ \frac{3x}{3} = \frac{15}{3} \\ x = 5 \end{array}$	$\begin{array}{r} 4 - 2x = -2 \\ -4 \quad -4 \\ \hline -2x = -6 \\ \div -2 \quad \div -2 \\ x = 3 \end{array}$

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

$x$  = number of other people who attended.

$$\begin{array}{r} 5x + 2 = 87 \\ -2 \quad -2 \end{array}$$

$$\begin{array}{r} 5x = 85 \\ \div 5 \quad \div 5 \\ x = 17 \end{array}$$

17 other people attended.