

Two – Step Equations

$$ax + b = c$$

Name: _____

Date: _____

Learning Goal 6.1

I can solve linear equations.

Recall Solve using the inverse operations. Show all work for full credit.

$$\begin{array}{l} a. \quad x + 2 = -13 \\ \quad \quad \quad -2 \quad \quad -2 \\ \quad \quad \quad x = -15 \end{array}$$

$$\begin{array}{l} b. \quad x - 7 = -3 \\ \quad \quad \quad +7 \quad \quad +7 \\ \quad \quad \quad x = -10 \end{array}$$

$$\begin{array}{l} c. \quad \frac{x}{-5} = 25 \\ \quad \quad \quad \frac{-5}{-5} \quad \quad \quad x = -5 \end{array}$$

$$\begin{array}{l} d. \quad \frac{8x}{8} = -3 \times 8 \\ \quad \quad \quad x = -24 \end{array}$$

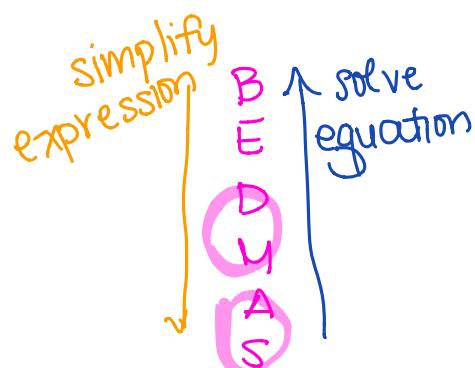
To solve a two – step equation

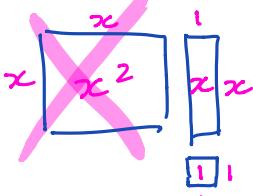
1. Add or subtract away any constants (a term without a variable)
2. Multiply or divide away anything working on the variable.

Example Solve the following equations using a balance scale to model it.

$$\begin{array}{l} a. \quad 6n + 6 = 12 \\ \quad \quad \quad \Rightarrow n = 1 \end{array}$$

$$\begin{array}{l} b. \quad 13 = 7 + 2p \\ \quad \quad \quad \Rightarrow p = 3 \end{array}$$





$$ax + b = c$$

Example Solve the following equations using algebra tiles to model it.

a. $2x - 2 = 4 \Rightarrow x = 3$

$$\begin{array}{c} \square \quad \square \\ \hline \end{array} = \begin{array}{c} \square \quad \square \\ \hline \end{array}$$

$$\begin{array}{c} \square \quad \square \\ \hline \end{array} = \begin{array}{c} \square \quad \square \\ \hline \end{array} \Rightarrow \begin{array}{c} \square \\ \hline \end{array} = \begin{array}{c} \square \\ \hline \end{array}$$

b. $2 = 3x - 1$

$$\begin{array}{c} \square \quad \square \\ \hline \end{array} = \begin{array}{c} \square \quad \square \\ \hline \end{array}$$

Example Solve the following by applying the opposite operation. Check your answer.

a. $-3x + 7 = 19$

$$\begin{array}{r} -7 \quad -7 \\ \hline \end{array}$$

$$\begin{array}{r} -3x = 12 \\ \hline -3 \quad -3 \\ \hline \end{array}$$

$$x = -4$$

CHECK	
LS	RS
$-3(-4)$	19
$+7$	
$= +12 + 7$	
$= 19$	

b. $+4 + 26g = -48$

$$\begin{array}{r} -4 \quad -4 \\ \hline \end{array}$$

$$\begin{array}{r} 26g = -52 \\ \hline 26 \quad 26 \\ \hline \end{array}$$

$$g = -2$$

BEDMAS

CHECK

LS	RS
$4 + 26(-2)$	-48
$= 4 + (-52)$	
$= -48$	

c. $24 = 14 - 5x$

$$\begin{array}{r} -14 \quad -14 \\ \hline \end{array}$$

$$\begin{array}{r} 10 = -5x \\ \hline -5 \quad -5 \\ \hline \end{array}$$

$$-2 = x$$

$$x = -2$$

CHECK	
LS	RS
24	$14 - 5(-2)$
	$= 14 + 10$
	$= 24$

d. $40 = 5x - 10$

$$\begin{array}{r} +10 \quad +10 \\ \hline \end{array}$$

$$\begin{array}{r} 5x = 50 \\ \hline 5 \quad 5 \\ \hline \end{array}$$

$$x = 10$$

CHECK	
LS	RS
40	$5(10) - 10$
	$= 50 - 10$
	$= 40$

Example A cow sleeps 7 hours a day. This amount of sleep is 1 hour less than twice the amount an elephant sleeps a day. How long does an elephant sleep? Define the variable, set up the equation and solve.

let p = the number of hours a day the elephant sleeps

$$\begin{array}{r} 7 = 2p - 1 \\ +1 \\ \hline \end{array}$$

$$\begin{array}{r} 8 = 2p \\ \hline 2 \quad 2 \\ 4 = p \end{array}$$

The elephant sleeps 4 hours a day.