

## Two – Step Equations

$$a(x + b) = c$$

BEDMAS

Name: \_\_\_\_\_

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

Learning Goal 6.1

I can solve linear equations.

## The Distributive Property

'rainbowing  
the a into  
the brackets'

$$a(x + b) = c$$

$$ax + ab = c$$

The distributive property  
says that a multiplier  
outside the brackets must  
meet every term inside the  
brackets.

To solve a two – step equation

1. Distribute in the multiplier OR if c is divisible by a then divide both sides by a.
2. Solve as per yesterday

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

a.  $3(x + 2) = 9$

1. Distribute.

$$3x + 6 = 9$$

$$\begin{array}{r} -6 \\ -6 \end{array}$$

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

$$x = 1$$

2. Divide.

$$\frac{3(x + 2)}{3} = \frac{9}{3}$$

$$x + 2 = 3$$

$$\begin{array}{r} -2 \\ -2 \end{array}$$

$$x = 1$$

CHECK

LS	RS
$3(1 + 2)$	9
$= 3(3)$	
$= 9$	

b.  $2(x - 3) = -12$

1. Distribute

$$2x - 6 = -12$$

$$\begin{array}{r} +6 \\ +6 \end{array}$$

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

$$x = -3$$

2. Divide.

$$\frac{2(x - 3)}{2} = \frac{-12}{2}$$

$$x - 3 = -6$$

$$\begin{array}{r} +3 \\ +3 \end{array}$$

$$x = -3$$

CHECK

LS	RS
$2(-3 - 3)$	-12
$= 2(-6)$	
$= -12$	

## Two-Step Equations

$$a(x + b) = c$$

$$c. \quad 48 = -4(x + 2)$$

1. Distribute.

$$48 = -4x - 8$$

$$+8 \qquad +8$$

$$\frac{56}{-4} = \frac{-4x}{-4}$$

$$-14 = x$$

$$x = -14$$

$$2. \text{ Divide } \frac{48}{-4} = \frac{-4(x+2)}{-4}$$

$$-12 = x + 2$$

$$-2 \qquad -2$$

$$-14 = x$$

$$x = -14$$

$$d. \quad 20 = -4(3 - x)$$

1. Distribute.

$$20 = -12 + 4x$$

$$+12 \qquad +12$$

$$\frac{32}{4} = \frac{4x}{4}$$

$$8 = x$$

$$x = 8$$

2. Division  $\frac{20}{-4} = \frac{-4(3-x)}{-4}$ 

$$-5 = 3 - x$$

$$-3 \qquad -3$$

$$-1x - 8 = -x - 1$$

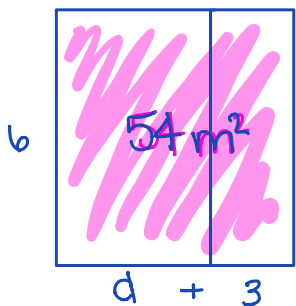
$$8 = x$$

$$x = 8$$

LS	RS

LS	RS

**Example** Dwayne buys another car, so he decides to increase the size of his driveway. He wants to increase the width by 3 metres but keeps the length at 6 metres. The area of his new driveway is 54 square metres. How wide was his original driveway? Define your variable, set up an algebraic equation and solve.



let  $d$  = the original width of the driveway

$$A_{\square} = l \times w$$

1. Distribute.

$$54 = 6(d + 3)$$

$$54 = 6d + 18$$

$$-18 \qquad -18$$

$$\frac{36}{6} = \frac{6d}{6}$$

$$6 = d$$

$$d = 6$$

2. Divide.

$$\frac{54}{6} = \frac{6(d+3)}{6}$$

$$9 = d + 3$$

$$-3 \qquad -3$$

$$6 = d$$

$$d = 6$$

The original driveway is 6 metres wide.