

### Simplifying by Distributive Property

The distributive property is used when a number is in front of the parentheses.

$$8(a+c)$$

\*Make sure you multiply everything in the parenthesis by the number outside.

*A=2w*

$$8 \cdot a + 8 \cdot c$$

$$8a + 8c$$

Or you can use the box method:

*Area Model*

	<i>a</i>	<i>+ c</i>
8	8a	+ 8c

1.  $3(x-y) + 2x$

	<i>x</i>	<i>-y</i>
3	3x	- 3y

2.  $3(2x-4)$

	<i>2x</i>	<i>-4</i>
3	6x	- 12

$$3x - 3y + 2x$$

$$5x - 3y$$

$$6x - 12$$

3.  $-5(x-6)$

	<i>x</i>	<i>-6</i>
-5	-5x	+ 30

4.  $2(b-8a) - 5(b+4a)$

	<i>2b</i>	<i>-16a</i>	<i>-5b</i>	<i>-20a</i>
--	-----------	-------------	------------	-------------

	<i>2b</i>	<i>-16a</i>
--	-----------	-------------

$$-5x + 30$$

$$-3b - 36a$$

	<i>-5b</i>	<i>-20a</i>
--	------------	-------------

### Solving - Distributive Property

5.  $7(n+1) - 4n = 4$

	<i>7n</i>	<i>+ 7</i>
--	-----------	------------

6.  $-7(x-3) = -14$

	<i>-7x</i>	<i>+ 21</i>
--	------------	-------------

$$\begin{aligned} \rightarrow 3n + 7 &= 4 \\ -7 & \quad -7 \\ \hline 3n &= -3 \\ \frac{3n}{3} &= \frac{-3}{3} \\ n &= -1 \end{aligned}$$

$$\begin{aligned} -7x + 21 &= -14 \\ -21 & \quad -21 \\ \hline -7x &= -35 \\ \frac{-7x}{-7} &= \frac{-35}{-7} \\ x &= 5 \end{aligned}$$

7.  $8 = 3 + 5(y-2)$

	<i>5y</i>	<i>- 10</i>
--	-----------	-------------

8.  $2(x-3) - 3(x-1) = -5$

*combine*

	<i>2x</i>	<i>- 6</i>
--	-----------	------------

	<i>-3x</i>	<i>+ 3</i>
--	------------	------------

*like terms*

$$\begin{aligned} 8 &= 3 + 5y - 10 \\ 8 &= -7 + 5y \\ +7 & \quad +7 \\ \hline 15 &= 5y \\ \frac{15}{5} &= \frac{5y}{5} \\ 3 &= y \end{aligned}$$

$$\begin{aligned} -x - 3 &= -5 \\ +3 & \quad +3 \\ \hline -x &= -2 \end{aligned}$$

9.  $5(x-2) - 5x = 10$

$x$	$-2$
$5x$	$-10$

$0x - 10 = 10$   
 $-10 = 10$   
No Solution

10.  $3(m+5) - 3(m+3) = 6$

$m$	$+5$
$3m$	$+15$

$m$	$+3$
$-3m$	$-9$

$0m + 6 = 6$   
 $6 = 6$   
 $m = \mathbb{R}$   
Doesn't matter what  $m$  is

11. The length of a rectangle is nine and the width is  $(x+6)$ . Find the value of  $x$  if the area of the rectangle is  $135 \text{ cm}^2$ . ( $A = lw$ )

$A = lw$   
 $135 = 9(x+6)$   
 $135 = 9x + 54$   
 $-54 \quad -54$   

---

 $81 = 9x$   

---

 $9 = x$

12. The length of a rectangle is  $(2x)$  and the width is  $(x+2)$ . If the perimeter is 40 feet, find the length and width. ( $P = 2l + 2w$ )

$40 = 2(2x) + 2(x+2)$   
 $40 = 4x + 2x + 4$   
 $40 = 6x + 4$

$40 = 6x + 4$   
 $-4 \quad -4$   

---

 $36 = 6x$   

---

 $6 = x$

length:  $2(6) = 12$   
width:  $(6+2) = 8$

13. The width of a rectangle is  $(x)$  and the length is three times the width. Find the width and length of the rectangle if its perimeter is 112 meters.

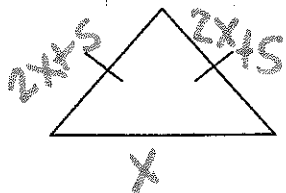
$P = 2l + 2w$   
 $112 = 2(3x) + 2(x)$   
 $112 = 6x + 2x$   
 $112 = 8x$

$112 = 8x$   

---

 $14 = x$

14. The length of each leg of an isosceles triangle is 5 centimeters more than twice the length of the base. If the perimeter of this isosceles triangle is 95 centimeters, what is the length of the base?



$95 = 2(2x+5) + x$   
 $95 = 4x + 10 + x$   
 $95 = 5x + 10$

$95 = 5x + 10$   
 $-10 \quad -10$   

---

 $85 = 5x$   

---

 $17 = x$