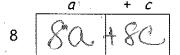## Simplifying by Distributive Property /Combining Like Terms

The distributive property is used when a number *or letter* is in front of the parenthesis.
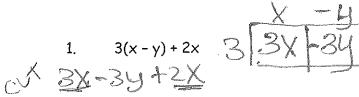
$8(a + c)$

$8 \cdot a + 8 \cdot c$

$8a + 8c$

*Make sure you multiply everything in the parenthesis by the number outside.
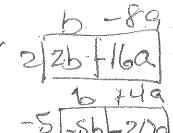
Or you can use the **BOX** method:

	a	+ c
8	8a	+8c

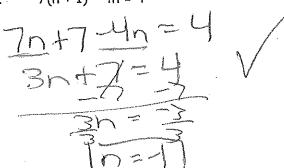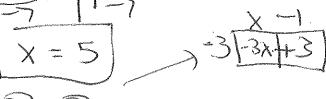**After distributing, you then need to simplify by combining all like terms (on each side of the = sign for equations)

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

	x	- y
3	3x	-3y

out $3x - 3y + 2x$

$5x - 3y$

2. $3(2x - 4)$

	2x	-4
3	6x	-12

$6x - 12$

3. $-5(x - 6)$

	x	-6
-5	-5x	+30

$-5x + 30$

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

	b	-8a
2	2b	+16a

	b	+4a
-5	-5b	-20a

$-3b - 36a$

Solving - Distributive Property

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

out $7n + 7 - 4n = 4$

$3n + 7 = 4$
$\quad -7 \quad -7$

$\dfrac{3n}{3} = \dfrac{}{3}$

$n = -1$

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

$-7x + 21 = -14$
$\quad\quad -21 \quad -21$

$\dfrac{-7x}{-7} = \dfrac{-35}{-7}$

$x = 5$

	x	-1
-3	-3x	+3

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

$8 = 3 + 5y - 10$
$\dfrac{8}{+7} = \dfrac{-7 + 5y}{+7}$

$\dfrac{15}{5} = \dfrac{5y}{5}$

$y = 5$

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

$2x - 6 - 3x + 3 = -5$

$-x - 3 = -5$
$\quad +3 \quad +3$

$\dfrac{-x}{-1} = \dfrac{-2}{-1}$

$x = 2$

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

CLT $5x - 10 - 5x = 10$

$-10 = 10$

no solution

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

$3m + 15 = 3m - 9 = 6$

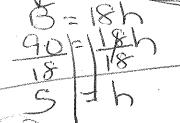$6 = 6$

infinite solution

11.   The cost, c, of the state fair is given by the formula c = 5.50r + 17, where r is the number of rides ridden. If Jess spent $33.50 at the fair, how many rides did he ride?

$33.50 = 5.50r + 17$
$-17 \qquad\qquad -17$
$\dfrac{16.50}{5.50} = \dfrac{5.50r}{5.50}$
$3 = r$

3 rides

12.   Cindy is making friendship bracelets at a rate of 18 bracelets in one hour. At that rate, how many hours will it take her to make 90 bracelets?
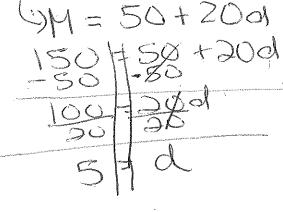
B: bracelets
h: hours

$B = 18h$
$\dfrac{90}{18} = \dfrac{18h}{18}$
$5 = h$

5 hours

13.   Judith had saved $150 to go to summer camp. If it costs $50 to register for the camp and they charge $20 per day for room and board, how many days can she spend at camp?

money = M
days = d

$M = 50 + 20d$
$150 = 50 + 20d$
$-50 \quad -50$
$\dfrac{100}{20} = \dfrac{20d}{20}$
$5 = d$

5 days