

1-7 The Distributive Property

You should have the following words defined in your notebook:

term, like terms, equivalent expressions, simplest form, and coefficient

An expression is simplified if there are **NO** like terms and **NO** parentheses.

Distributive Property: $x(y + z) = xy + xz$ $x(y - z) = xy - xz$

Ex 1: $3(5x + 22)$
 $3(5x) + 3(22)$
 $15x + 66$

Distribute the 3 to all terms in the parentheses. (You must show this step)
Multiply (only when doing the distributive property in this chapter, you can do both multiplications in one step)

Since $15x$ and 66 are not like terms, $15x + 66$ is the final answer.

Ex. 2: $(8x - 3y)7$
 $(8x)7 - (3y)7$
 $56x - 21y$

Distribute the 7 to all terms in the parentheses. (It doesn't matter that the 7 is on the right side of the parentheses.)
Multiply.

Since $56x$ and $21y$ are not like terms, $56x - 21y$ is the final answer.

Ex. 3: $7x + x + 9y - 8y$
 $8x + 9y - 8y$
 $8x + y$

$7x$ and x are like terms. Remember $x = 1x$, so you are doing $(7 + 1)x = 8x$
 $9y$ and $8y$ are like terms. $(9 - 8)y = 1y$. Because of the Mult.ID Prop, $1y = y$

Since $8x$ and y are not like terms, $8x + y$ is the final answer.

Ex. 4: $6(4x + 11) - 20$
 $6(4x) + 6(11) - 20$
 $24x + 66 - 20$
 $24x + 46$

Distribute the 6 to get rid of the parentheses.
Multiply
Since 66 and 20 are like terms, combine them.

Since $24x$ and 6 are not like terms, $24x + 46$ is the final answer.

Ex. 5: $5(2x + 7) + 4(10 + 9y)$
 $5(2x) + 5(7) + 4(10 + 9y)$
 $10x + 35 + 4(10 + 9y)$
 $10x + 35 + 4(10) + 4(9y)$
 $10x + 35 + 40 + 36y$
 $10x + 75 + 36y$

Distribute the 5 to every terms in the first parentheses.
Multiply
Distribute the 4 to every terms in the second parentheses.
Multiply
Since 35 and 40 are like terms, combine them.

Since $10x$, 75 and $36y$ are not like terms, $10x + 75 + 36y$ is the final answer.