

Algebra I Notes #2 Terms and Coefficients Unit 1

The left-hand column below illustrates the relationship between multiplication and addition. For example, $4 \cdot 5$ means 4 groups of 5 or $5 + 5 + 5 + 5$. The right-hand column simply illustrates the same relationship using the variable x .

$1 \cdot 5 = 5$	$1 \cdot x = x$
$2 \cdot 5 = 5 + 5$	$2 \cdot x = x + x$
$3 \cdot 5 = 5 + 5 + 5$	$3 \cdot x = x + x + x$
$4 \cdot 5 = 5 + 5 + 5 + 5$	$4 \cdot x = x + x + x + x$
$5 \cdot 5 = 5 + 5 + 5 + 5 + 5$	$5 \cdot x = x + x + x + x + x$
$6 \cdot 5 = 5 + 5 + 5 + 5 + 5 + 5$	$6 \cdot x = x + x + x + x + x + x$
$7 \cdot 5 = 5 + 5 + 5 + 5 + 5 + 5 + 5$	$7 \cdot x = x + x + x + x + x + x + x$

When a variable is involved, the multiplication sign can be dropped.

$$\begin{aligned}1x &= x \\2x &= x + x \\3x &= x + x + x \\4x &= x + x + x + x \\5x &= x + x + x + x + x \\6x &= x + x + x + x + x + x \\7x &= x + x + x + x + x + x + x\end{aligned}$$

Expressions like $1x$, $2x$, $3x$, $4x$, etc. are called **x-terms**. The numbers 1, 2, 3, 4, etc. are called numerical coefficients (or just coefficients). Similarly, y , $2y$, $3y$, $4y$, etc. are called **y-terms**. Simplify each of the following expressions.

1. $x + x + x + x + x = \underline{5x}$. 2. $b + b + b = \underline{3b}$

3. $(a + a + a + a) + (c + c + c) = \underline{4a + 3c}$

The expression $4a + 3c$ can not be simplified. The terms $4a$ and $3c$ are not like terms.

4. $(d + d + d + d) + (d + d + d) = \underline{4d + 3d} = \underline{7d}$

The expression $4d + 3d$ can be simplified. The terms $4d$ and $3d$ are like terms. Like terms can be added. Simply add the coefficients !!

5. $6x + 4x = \underline{10x}$ 6. $5y + y = 5y + 1y = \underline{6y}$

7. $ab + ab + ab + ab = \underline{4ab}$ 8. $8xy + 3xy = \underline{11xy}$

These examples can not be added because they are not like terms.

9. $6x + 7y$ 10. $3xy + 4y$ 11. $5x + 4$

Like terms can also be subtracted.

12. $7x - 3x = \underline{4x}$ 13. $8a - 2a = \underline{6a}$ 14. $4xy - 3xy = \underline{1xy}$ or \underline{xy}