Math 7 Notes
Simplify Algebraic Expressions
(Chapter 5 Lesson 5)

When addition or subtraction signs separate an algebraic expression into parts, each part is called a term. 3 terms

$3x + 4y$ 2 terms $x^2 - 6x + 3$

Like terms contain the same variables to the same powers.

Like terms	Not like terms
$6x, 3x$	$6x, 3y$
$4x^2, -6x^2$	$6x, 3x^2$
$-6ab, 7ab$	$-6a, 7ab$

7, -8

In an alebraic expression, the number being multiplied by the variable is called the coefficient.

$3n$	3 is the coefficient
$4a + 7$	4 is a coefficient
$5 - 2x + 6x$	-2 and 6 are coefficients
$5 + -2x + 6x$	
$n + 8$	1 is the coefficient
$-3n^2 - n + 8$	-3 and -1 are coefficients

$-3n^2 + -1n + 8$

In an alebraic expression, a term without a variable is called a constant.

$3n + 7$	7 is the constant
$4a^2 - 1$	-1 is the constant
$4a^2 + -1$	
$5 - 2x$	5 is the constant
$5 + -2x$	

A term is a number (Ex: 6), a variable(Ex: y), or a product (Ex. 2a) or quotient(Ex: $\frac{a}{3}$) of numbers and variables.

Terms are separated by addition or subtraction in an algebraic expression.

1 term:	$4x$	6	$-2ab$
2 terms:	$3x + 5$	$x - y$	$7x^2 + x$
3 terms:	$x^2 - 6x + 1$		$x - 2y + 5z$

A coefficent is the numerical factor of a multiplicaton expresson that contains a variable. Ex: In the term 3x, 3 is a coeffcient

In the term y, 1 is the coefficent. 1y

In the term -a, -1 is the coeffcient -1a

	Algebraic Expression	Terms	Like Terms	Coefficients	Constants
(4)	7n - 9n - 4 + n $7n + {}^{-}9n + {}^{-}4 + 1n$	$7n, -9n, -4, 1n$	$7n, -9n, 1n$	$7, -9, 1$	-4
(3)	$4x^2 + 3x - 6$ $4x^2 + 3x + {}^{-}6$	$4x^2, 3x, -6$	X	4, 3	-6
(3)	$-6x + 9 + 4x$	$-6x, 9, 4x$	$-6x, 4x$	$-6, 4$	9
(4)	$-3x - x - 2y + y$ $-3x + {}^{-}1x + {}^{-}2y + 1y$	$-3x, -1x, -2y, 1y$	$-3x, -1x$ and $-2y, 1y$	$-3, -1, -2, 1$	X

To simplify algebraic expressions:

*Use distributive property to clear parentheses
*combine like terms by adding or subtracting them

Examples:

$X + 9X$

$1X + 9X$

$10X$

$-X + 21X - 8$

$-1X + 21X + {}^{-}8$

$20X + {}^{-}8$

$20X - 8$

$8X + 4X + 7$

$12X + 7$

$3(X + 4) + 10X$

$3X + 3(4) + 10X$

$3X + 12 + 10X$

$13X + 12$

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Examples:

$6 - 8n - 10$

$6 + {}^{-}8n + {}^{-}10$

$-4 + {}^{-}8n$

$-8n + {}^{-}4$

$-8n - 4$

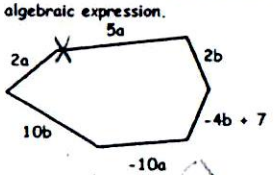
$2a - b + 10a - 4b$

$2a + {}^{-}1b + 10a + {}^{-}4b$

$12a + {}^{-}5b$

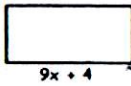
$12a - 5b$

Show how to find the perimeter of these figures. Give your answer as a simplified algebraic expression.



$5a + 2b + {}^{-}4b + 7 + {}^{-}10a + 10b + 2a$

$-3a + 8b + 7$



$P = 2l + 2w$

$2(9x + 4) + 2(5x)$

$2 \cdot 9x + 2 \cdot 4 + 10x$

$18x + 8 + 10x$

$28x + 8$ units