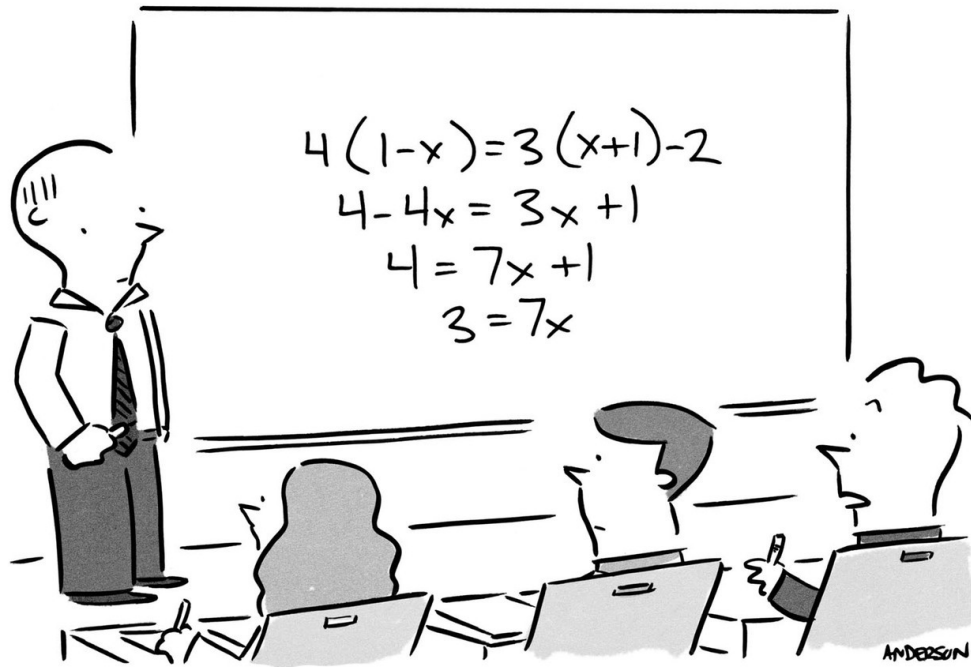


Name _____.

Math 9
(MTH1W)

© MARK ANDERSON, WWW.ANDERSTOONS.COM



"Wouldn't it be more efficient to just find who's complicating equations and ask them to stop?"

Unit 2: **ALGEBRA**

- An Upgrade for your Mind!!! 😊

WHAT IS ALGEBRA? Learning algebra is like learning to read. It's a skillset for working with numbers and variables that unlocks a whole amazing world of math & science!

Math 9 – Unit 2: Algebra One

Name: _____

Lesson 2.1: Collecting Like Terms

Date: _____

In this unit, you will be introduced to one of the most important components to Mathematics: Algebra. Algebra comes from the Arabic word “*al-jabr*”, meaning “the coming together of broken parts”, and math is about bringing together ideas to solve problems. In Algebra, we will look at how to use Mathematical symbols and the rules for manipulating them. Typically, the symbols are letters.

Learning Goal: We are learning common math terminology, and using those terms to simplify algebraic expressions.

To begin, let’s define some terminology that is important in Algebra.

Expression:

Variable:

Numerical Coefficient:

Constant:

Like terms:

Example: Given the following expressions, state the number of terms, the numerical coefficients for each term, and the constant term.

a) $3x^2 - 5x + 7$

b) $-5y + 10x + 8 - 12y$

Expression	Terms	Numerical Coefficients	Constant terms
		Coefficient of ____ =	
	Number of terms =	Coefficient of ____ =	
		Coefficient of ____ =	
	Number of terms =	Coefficient of ____ =	

In the above example, the second expression has 4 terms, but two of them had the same variable. This means that we can combine them together. All you need to do is add, or subtract, their coefficients. This process is called **collecting like terms**.

Collect the like terms in the above example: $-5y + 10x + 8 - 12y$

More examples:

a) $-6 - 3r^2 - 4r + 2 + 6r$

b) $-4k^3 - 8k^2 + 4 + 7k^4 - k^3 - 8k^2 - 1$

c) $7a^2b^2 + 2a^4 - 8a^3b^3 - 4a^2b - 2a^4 - 2a^3b^3 + 8a^2b^2$

Now for a super duper big example:

$$d) -8x - x^2y^2 - 8x^3y^5 + 3x^3y + 2x^3y + 6x + 2x^2y^2 + 2xy - 2x^2y^2 + 5x^3y^4 + 3xy + 5x$$

There's more! Did you ask, "what term should I write first?" If you did, good thinking! There is a definite order to writing out expressions. It is called **descending order**.

Descending order is:

Now go back to the above examples and put them in descending order.

When an expression is simplified, we call that a _____, meaning _____. However, we also have special names for expressions with one, two, or three terms.

$4x^2$ is called a _____.

$3x^5 - 2xy$ is called a _____.

$7y^2 + 5y - 1$ is called a _____.

Anything over that we just call a _____.

Examples: For each expression, collect the like terms and state the type of polynomial.

a) $-2v - 2v^5 - 8 + 2v^5 + 7v$

b) $3xy - 4x^2y + 8x^4y + 6xy - 7x^2y - 7x^4y$

c) $1.75x^5 - 0.6x^4 - 1.6x^4 + 0.85x^5$

Success Criteria:

- I can correctly define the following terms: expression, variable, coefficient, constant, like term, unlike term, monomial, binomial, trinomial, polynomial, and degree
- I can group like terms within algebraic expressions
- I can identify the degree and type of various polynomials

Build your Skills: :)

1. Create an algebraic expression to represent each of the following.
 - a) A number x is tripled and then 19 is subtracted from the result.
 - b) The variable y is squared and then the result is increased by 10.
 - c) The variable n is decreased by 6 and then the result is multiplied by -8 .
 - d) A number p is increased by 70 and then the result is divided by 6.
2. The sum of the interior angles of a polygon can be found by subtracting 2 from the number of sides and multiplying the result by 180° .
 - a) Determine an algebraic expression to represent the sum of the interior angles for a polygon with n sides.
 - b) Use your expression from part (a) to determine the sum of the interior angles for an octagon.
 - c) A regular polygon has equal side lengths and equal interior angles. Determine the value of each interior angle in a regular hexagon.
 - d) The sum of the interior angles for a particular polygon is 1440° . How many sides does this polygon have?
 - e) For a given regular polygon, each interior angle is 156° . How many sides does the polygon have?