Recognize and Identify Monomials, Binomials and Trinomials

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9.1 Recognize and Identify Monomials, Binomials and Trinomials

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[Figure 1]

Sam saw this expression in his math book.

$$x^2 - 8$$

He isn't sure how to classify this expression. Do you know?

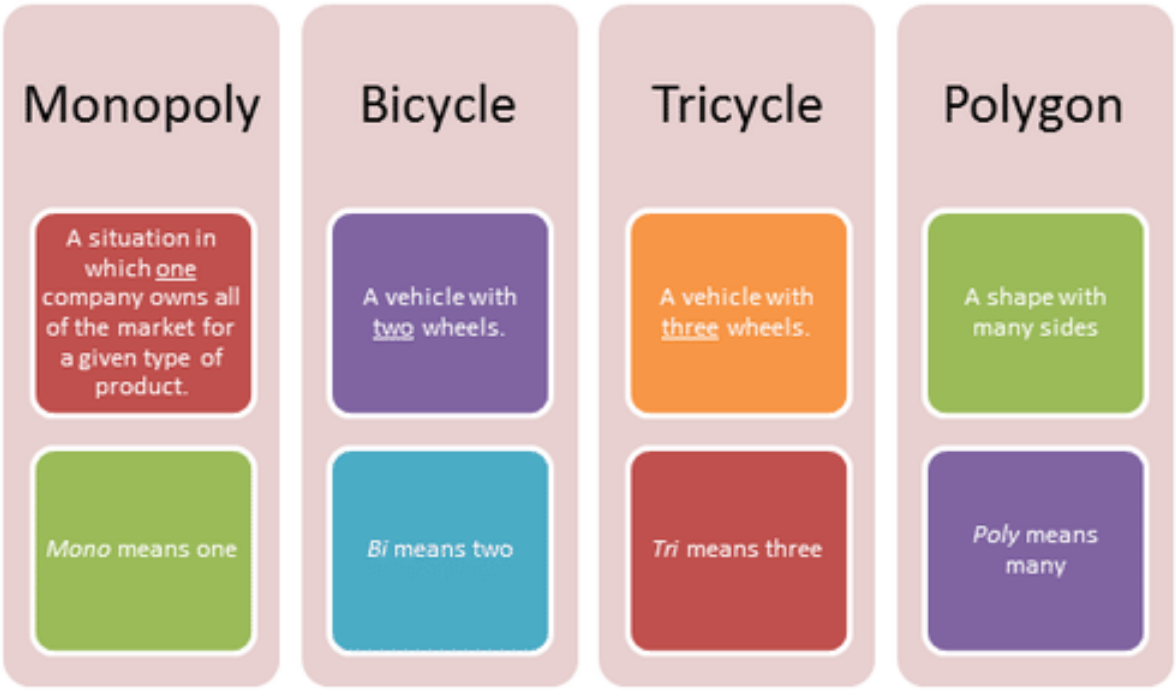
In this concept, you will learn to recognize and identify monomials, binomials and trinomials.

Monomials and Polynomials

Sometimes, an expression or an equation will have exponents and variables in it. These expressions and equations can have more than one variable and sometimes more than one exponent. To understand how to work with these variables and exponents, you have to understand **polynomials**. A polynomial is an algebraic expression that shows the sum of monomials.

A **monomial** is an expression in which variables and constants may stand alone or be multiplied. A monomial cannot have a variable in the denominator. You can think of a monomial as being one term.

To understand these new terms better, let's look at some word prefixes. The chart below shows some common terms and the meaning of their prefixes.



[Figure 2]

In math these prefixes are used often. Each prefix will give a hint as to the type of expression that you are dealing with. The prefix mono, for example, means one, a monomial is a single piece or term.

Here are some monomials:

$$5 \qquad x^3 \qquad -2x^5 \qquad x^2y$$

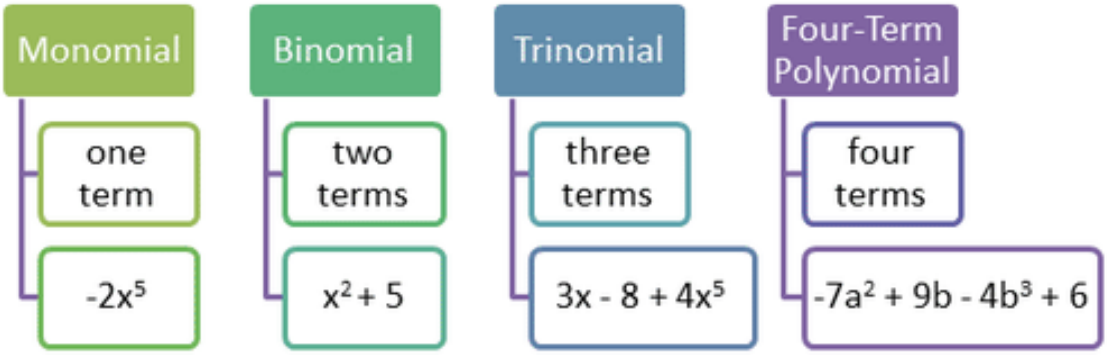
The prefix poly means many. So the word polynomial refers to one or more than one term in an expression. The relationship between these terms may be sums or difference.

Here are some polynomials:

$$x^2+5 \qquad 2x-8+4x^5 \qquad -7a^2+9b-4b^3+6$$

You call an expression with a single term a monomial, an expression with two terms is a **binomial**, and an expression with three terms is a **trinomial**. An expression with more than three terms is named simply by its number of terms. For example a polynomial with five terms is called a five-term polynomial.

From the information above, you can name the expressions as follows:



[Figure 3]

Examples

Example 1

Earlier, you were given a problem about Sam. Sam has the expression $x^2 - 8$ and needs to classify it.

First, count the number of terms. In this expression there are two terms.

Next, classify the expression based on the number of terms. Two terms means it is a binomial.

The answer is binomial.

Example 2

How would you identify the following expression?

$4x^2 - 8y + 4$

First, consider how many terms are in the expression.

This expression has three terms.

Therefore, this expression is called a trinomial.

Example 3

Identify the expression $4x^3 - 8$.

First, consider how many terms are in the expression.

This expression has two terms.

The answer is binomial.

Example 4

Identify the expression $x^2 + 3x + 9$.

First, consider how many terms are in the expression.

This expression has three terms.

The answer is trinomial.

Example 5

Identify the expression $6xy$.

First, consider how many terms are in the expression.

This expression has one term.

The answer is monomial.

Review

Use the chart to identify each term with the correct label.

Number of Terms	1	2	3	4
Name	monomial	binomial	trinomial	four-term polynomial
Expression	$-2x^5$	$x^2 + 5$	$3x - 8 + 4x^5$	$-7a^2 + 9b - 4b^3 + 6$

1. $4x^2$
2. $3x + 7$
3. $9x^2 + 6y$
4. $x^2 + 2y^2 + 8$
5. $5c^3$
6. $3x^2 + 4x + 3y^2 + 7$
7. $4x + 3xy + 9$
8. $2x^2 + 7y + 9$
9. $14xy$

10. $4x^2 + 5x - 9$

11. $5x^3 - 4x^2 + 3x - 10$

12. $4x$

13. $16x + 4$

14. $18x^2 + 5x - 8$

15. $9xyz$

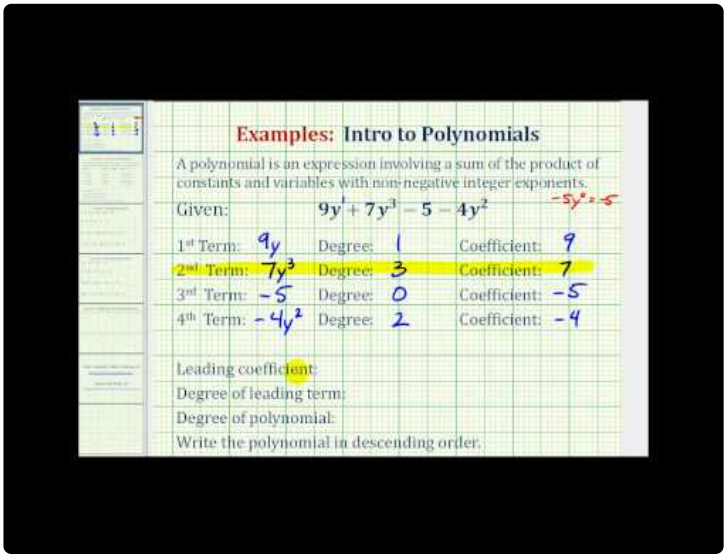
16. $5xy - 6x$

17. $18x^2 - 9x$

Review (Answers)

To see the review answers, return to the Table of Contents and select 'Other Versions' or 'Resources'.

Resources



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