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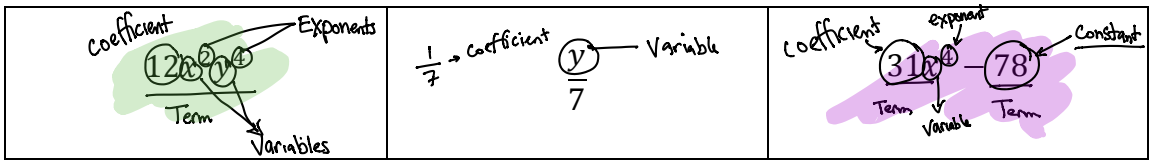
Mr. Rogove Date: _____

Learning Objective: We will classify polynomials. (Alg1M1L2)

Activating Prior Knowledge:

We already know how to classify terms: identify each part of the term: coefficient, variable, and exponent, if they exist.



3x + 12

Monopoly Monotone Monorail Monotheism — ONE

Concept Development:

Monomial: A monomial is a number, variable, or product of numbers and variables that have whole number exponents. A monomial cannot have more than 1 term, and it cannot have a variable in the denominator.

Examples: $5, \quad x, \quad -7xy, \quad 0.5x^4$

Non-examples: $-0.3x^{-2}, \quad 4x - y, \quad \frac{2}{x^3}$

Polygamy Polygon Polytheism — MANY

Polynomial: A polynomial is a monomial or the sum of more than one monomial.

Example: $3r^4 - 2t^2 + 3w - 12x$

Binary Bisexual Bipolar Bicycle Binocular — two

Binomial: A binomial is a polynomial with two terms.

Example: $4x^5 + 12x$

triathlon triangle tricycle — three

Trinomial: A trinomial is a polynomial with three terms.

Example: $81y^4 - 11y^3 + 17$

Degree of a Polynomial: the greatest sum of the exponents on the variables in each term.

binomial

Examples: $5x^4 + 3x^3$ is a fourth degree polynomial.

$3x^3y^2 + 5y^4$ is a fifth degree polynomial.

$5x^2 + 2x^2 =$

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Guided Practice:

Steps for Classifying Polynomials by Degree and Terms

1. Count the number of terms.
2. Add up the exponents for the variables in each term. Assign the degree based on the highest number.

$6x^3 + 5x^2y^2$ 2 terms → binomial 4th degree binomial	$3^5 + 2n^2 + 8n$ 3 terms → trinomial 2nd degree trinomial
$3x^2y^2 + 4xy^2 + 5xy$ * 3 terms → trinomial 4th degree trinomial	$4p^2q^2 - 5pq + q^5$ * 5th degree trinomial
$x^3y^2 + x^{0.5}$ Not a polynomial. Need whole # exponent.	$3y^2 - \frac{4}{x^3}$ Not a polynomial No variables allowed in denominator.
$15g^2h + 3g^2$ 3rd degree binomial	$8a^2b - 13ab^2$ 3rd degree binomial

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Steps For Simplifying Polynomials

1. Use the commutative property to rearrange the terms in descending order of exponents.
2. Use the distributive property to combine like terms.
3. Simplify.

$3r^3 - 2r^2 + 5r^2 - 4r^3$ $3r^3 + (-2r^2) + 5r^2 + (-4r^3)$ COMMUTATIVE $(3r^3 + (-4r^3)) + ((-2r^2) + 5r^2)$ $-r^3 + 3r^2$	$p^2q^5 - 4p^5q^4 - 4p^2q^5 + 3p^5q^4$ $-p^5q^4 - 3p^2q^5$
$5r^3 - r^2s + 6 - 3r^2s - r^3 + 2^5$ $4r^3 - 4r^2s + 38$	$7a^2 - ab - 75 - 5ab + a^2 + 5^3$ $8a^2 - 6ab + 50$
A skyrocket is launched from a 6-foot high platform with an initial speed of 200 feet per second. The polynomial $-16t^2 + 200t + 6$ gives us the height in feet that the rocket will rise in t seconds. How high will the rocket rise if it has a 5-second fuse? $-16(5)^2 + 200(5) + 6$ $-16 \cdot 25 + 1000 + 6$ $-400 + 1006$ 606 ft.	A separate rocket is launched from the top of a building, 50 feet high with an initial speed of 200 feet per second. Its flight can be modeled by the equation $H = -16t^2 + 200t + 50$, where H is the height after the rocket has been traveling for t seconds. How high is the rocket after 3 seconds? $H = -16(3)^2 + 200(3) + 50$ $= -16 \cdot 9 + 600 + 50$ $= -144 + 600 + 50$ $H = 506$ ft.

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Independent Practice:

Give out exercise set C for practice.

Closure:

The number of cells in a bacteria colony increases according to the expression $t^2 + 4t + 4$ with t representing the time in seconds that colony is allowed to grow at 20°C and $t^2 + 3t + 4$ when the colony grows at 30°C.

1. After 1 minute, which will be greater in number, a colony at 20°C *or* 30°C ?

2. After 10 minutes, how will the colonies compare in size?

Notes:

This is Go Math Pilot, mapping to lesson 14-1. There is not a good match to material in ENY Alg 1 for this lesson, but it's foundational to the rest of the module.

Do Visual Patterns Pattern 14 and 15.