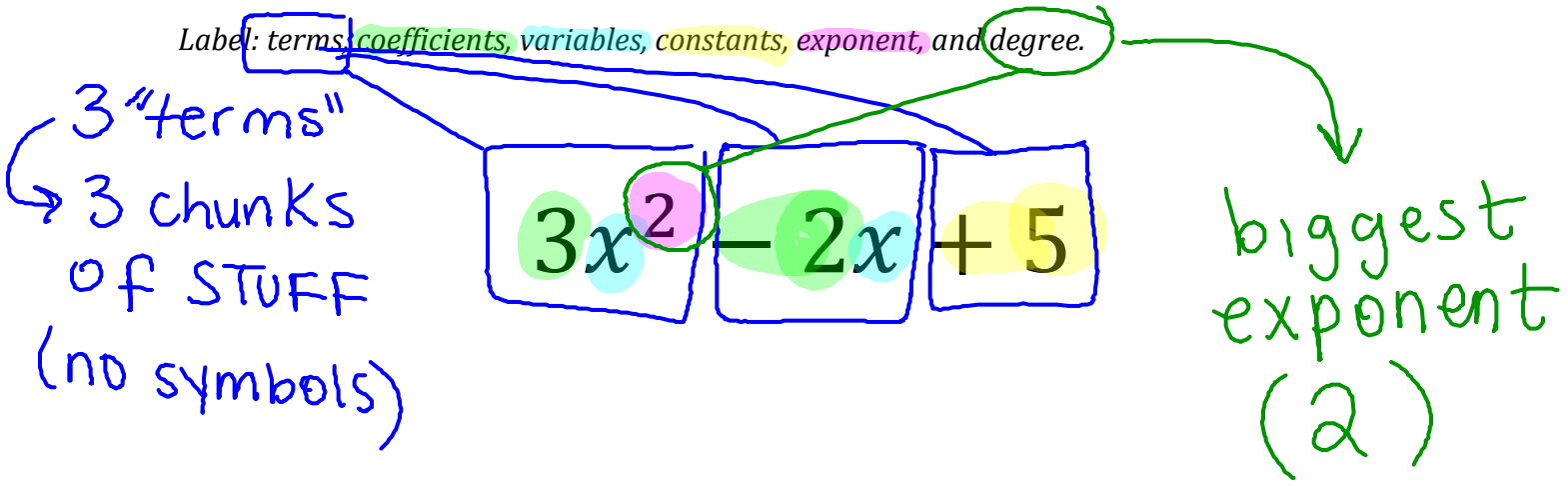
Name:_____

U3:L1 Intro to Polynomials

Label: terms, coefficients, variables, constants, exponent, and degree.



	What is it?	*Examples*
MONOMIAL monochromatic monotone monopoly	1 number, variable or term	3 b^2 x $12a^3$ $-72y$
BINOMIAL bicycle bicep binoculars bisexual biology bioluminescence	2 2 monomials added together (2 terms)	$3 + x$ $-72y + a$ $b^3 - 12a^3$
TRINOMIAL tricycle triangle tricep	3 3 monomials (3 terms)	$3 + x + y$ $-12a^3 + b^2 + 4$ $x - 72y + a^5$
POLYNOMIAL polygon polygamy	more than 3 terms (general)	$3 + x + y + z$ $-12a^3 + b^2 + 4 + a$ $x - 72y + 5 - a^3 + k$

An algebraic expression that contains a variable in the denominator, or a square root of a variable, is NOT a polynomial.

EX: $\frac{3}{n}$ or $\sqrt{a}$ or $\frac{72}{y} + 4$ or $3x + \sqrt{h}$

Classify (name) the following polynomials by number of terms:

1. $3x-5$ binomial
2. $6x^3-5x+2$ TRinomial
3. $4x^4-3x^7+4x^2+x-2$ P
4. $2x^3$ M
5. $5x^5-13x+271$ T
6. $144x^4-9$ B

We also classify polynomials by degree.

The largest exponent of a polynomial determines the degree of the polynomial.

Largest Exponent	Name	Example
0	constant	$12x^0=12$
1	linear	$3x=3x^1$
2	quadratic	46^2
3	cubic	$9y^3+y^2$
4	quartic	$10a^4+5$
5	quintic	$2f^5+f^3+f$

Classify (name) the following polynomials by degree.

7. $3x-5$ linear
8. $6x^3-5x+2$ CUBIC
9. x^1-2 linear
10. $2x^3$ CUBIC
11. $5x^5-13x+271$ quadratic
12. $144x^4-9$ quartic
13. 51 constant

Fill in the following table:

Polynomial	Polynomial Classification	Largest Exponent	Degree Classification	Coefficients
$3x^2+5x-7$	trinomial	2	quadratic	3 5
$2x^3$	Mono	3	cubic	2
x^3-4x^2	binomial	3	cubic	-4
$-4x$	mono	1	linear	-4
$3x^2-4$	binomial	2	quadratic	3

The order of a polynomial is important.

We organize a polynomial in Standard Form which means that the terms are placed in descending order from largest degree to smallest degree.

Ex: $7x^5 - 3x^4 + x^3 - 2x^2 + 4x + 12$ constant @ the end

Circle the following polynomials that are ordered in standard form. Rewrite the others in standard form:

$1 - 2x$ → $-2x + 1$

$4x - 2$

$3x^2 - 3x - 3$

$4x^3 - 2x^4 + 6$ → $-2x^4 + 4x^3 + 6$

$6x^6 - 2x$

$5x^5 - 8x^4 + 3x^2 + 4x^3 - 1$ → $5x^5 - 8x^4 + 4x^3 - 3x^2 - 1$

$5x^2 - 3x + 2$

Just because a polynomial is NOT written in standard form, does not mean it is not a polynomial.

This means there are polynomials which are EQUIVALENT (the same value) as each other but written in different orders.

Create an equivalent polynomial for each of the following:

$3f^4 - 2f + 5f^6$	$= 5f^6 + 3f^4 - 2f$
$6a^2 - 3a + 5$	$= 5 + 6a^2 - 3a$
$23b^4 - 2b$	$= -2b + 23b^4$
$30r^{10} - 2 + 5r^2$	$= -2 + 30r^{10} + 5r^2$
$x^5 + 4x^4 - 2x + 5x^3$	$= 4x^4 - 2x + 5x^3 + x^5$