Essential Question: How do we add and subtract polynomials?

Do Now: What did you learn from the Flip? Complete the table below.

Polynomial	Most Specific Name	Standard Form	Degree	Leading Coefficient	Constant Term
6	monomial	6	0	6	6
$-2x$	monomial	$-2x$	1	-2	0
$9 + 3x$	binomial	$3x+9$	1	3	9
$2x - 5 - x^2$	trinomial	$-x^2+2x-5$	2	-1	-5
$4x^3 - 8x$	binomial	$4x^3-8x$	3	4	0
$1 - 7x^2 + 6x + 2x^3$	polynomial	$2x^3-7x^2+6x+1$	3	2	1

How do we determine the degree of a monomial with more than one variable?

Sum the exponents of the variables.

a) $5x^2y^3$ Degree: 5

b) $-3xy^3$ Degree: 4

c) $7ab^3c^5$ Degree: 9

STOP HERE

Adding Polynomials

How do we add polynomials? *Consider:* $(8x^2 + 3) + (2x^2 - 6x + 4) + (-5x^2 - 7x)$

combine like terms

$8x^2 + 3 + 2x^2 - 6x + 4 - 5x^2 - 7x$

$5x^2 - 13x + 7$

Find the sum of the given polynomials. Represent your final answer in standard form.

1) $(6 - 3t - t^4) + (9t + t^4) + 5t^2$

$6 - 3t - t^4 + 9t + t^4 + 5t^2$

$5t^2 + 6t + 6$

Subtracting Polynomials

How do we subtract polynomials? Consider: $(3x^3 - x^2 + 8) - (2x^2 + 3x + 1)$

- distribute the negative to all terms in the ( )
- combine like terms

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

$3x^3 - 3x^2 - 3x + 7$

Find the difference of the given polynomials. Represent your final answer in standard form.

2) $(7y^2 + 9y) - (3y^2 + 7)$

$7y^2 + 9y - 3y^2 - 7$

$4y^2 + 9y - 7$

3) Subtract $(5x^2 - 2x + 1)$ from $x^2 + 5x$ (comes first)

$x^2 + 5x - (5x^2 - 2x + 1)$

$x^2 + 5x - 5x^2 + 2x - 1$

$-4x^2 + 7x - 1$

NOW IT'S YOUR TURN

4) $(6x^3 + 7x) - (3x^2 + 5) + (x^2 - 10x - 1)$

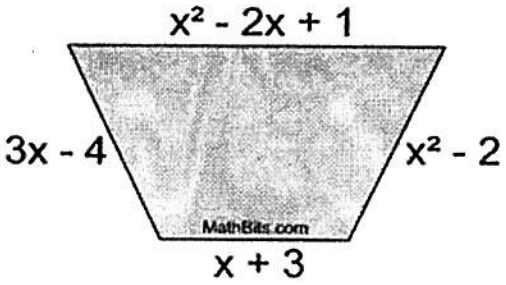
$6x^3 + 7x - 3x^2 - 5 + x^2 - 10x - 1$

$6x^3 - 2x^2 - 3x - 6$

5) Write a simplified polynomial expression that represents the perimeter of the quadrilateral.

$3x - 4 + x^2 - 2x + 1 + x^2 - 2 + x + 3$

$2x^2 + 2x - 2$ units

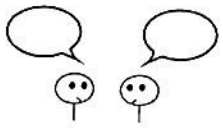


The TAKE AWAY

We can add and subtract polynomials by combining like terms.

***Reminder**: Always distribute the - sign when subtracting.*

Turn and Talk:



1) Is it possible that a sum of two binomials results in a monomial? Justify your response with an example.

Yes, when you have additive inverses

ex. $(6x+5) + (3x-5)$

$9x$

2) The RMS Spotlight club is sponsoring a school dance with complimentary refreshments in order to fundraise for their upcoming show. They have made a list of expenses and revenue. Using the list, write a simplified polynomial expression in standard form that represents their profit if x students attend the dance.

Revenue	*Expenses*
Admission Fee - $5.00 per student	*DJ - $500*
PFA Donation - $200	*Refreshments per student - $1.50*

x: number of students who attend the dance

profit = revenue − (expenses)

$= 5x + 200 - (1.50x + 500)$

$= 5x + 200 - 1.5x - 500 \longrightarrow \boxed{3.5x - 300}$

Using your expression, calculate the profit of the club if 620 students attend the dance.

$P = 3.5x - 300$

$= 3.5(620) - 300$

$= 2170 - 300$

$= \$1870$