Investigating Polynomials (pp. 1 of 3)

Vocabulary

Polynomial – _____

A polynomial can be classified according to how many "terms" it has.

Category	Sample	Definition
	$\frac{5}{2}x^2y^3$	One term
	$4x^2-9x$	_____ terms
	$2x^2+3x+1$	_____ terms
	$3a^4b+7bc^2+6cd-8$	_____ or _____ terms

Degree of a Polynomial – _____

Sample	Degree of each term	Degree of Polynomial
$\frac{5}{2}x^2y^3$	5	5
$4x^2-9x$		
$2x^2+3x+1$		
$3a^4b+7bc^2+6cd-8$		

Operations To simplify polynomials with addition, subtraction, and multiplication:

- Clear grouping symbols using properties of algebra (distributive)
- Combine like terms using properties of algebra (commutative, associative).

Sample Problems

1) $(-4x^2-3xy+5y^2)+2(3x^2-3xy-5y^2)$

2) $(3x^2+6xy-7y^2)-(-x^2+5xy-2y^2)$

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Perform the indicated polynomial operations. Simplify answers, and classify each answer by its degree and number of terms.

3) $3xy^2(5x^2y - 6xy^3)$

4) $(x+8)(x-3)$

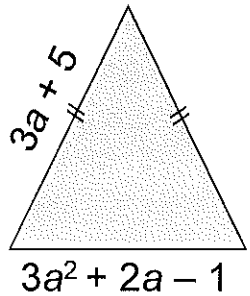
5) $(x+4)^2$

6) $(2x+3)(2x-3)$

Applications:

7) A rectangle has a width represented by $4x + 5$ and a length represented by $3x + 2$. What expression can be used to represent the area of the rectangle?

8) The diagram below shows an isosceles triangle. Find the expression that represents the perimeter of the triangle.



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Practice Problems

Simplify the following polynomials.

1. $2(4x^2+3xy-7y^2)+(2x^2-5xy-3y^2)$

2. $(5m^2-2mp-6p^2)-2(-3m^2+5mp-p^2)$

3. $2x(x+5)-x(3-x)$

4. $5a^2b(7ab^2+3a-4b)$

5. $(3x-2y)(-4x+y)$

6. $(2x+1)^2$

7. $(5x+4)(5x-4)$

8. $(2n-3)(n^2+5n-1)$

9. The height of a triangle is represented by the expression $(x + 2)$. The base is represented by $(2x – 8)$. Find the expression that can be used to represent the area of the triangle.

10. The width and length of a rectangle are given in the diagram below. Find the expression that can be used to represent the area of the rectangle.