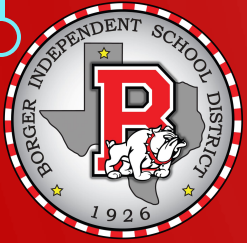


# BOARD NOTES

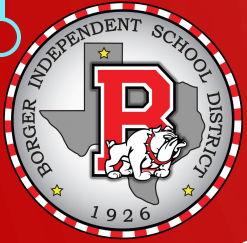
6 NOVEMBER 2019



2A.7 (B) add, subtract, and multiply polynomials;  
2A.7 (C) determine the quotient of a polynomial of degree three and of degree four when divided by a polynomial of degree one and of degree two;  
2A.7 (D) determine the linear factors of a polynomial function of degree three and of degree four using algebraic methods;  
2A.7 (E) determine linear and quadratic factors of a polynomial expression of degree three and of degree four, including factoring the sum and difference of two cubes and factoring by grouping;



We will be able to determine the factors of special binomial and trinomial polynomials.



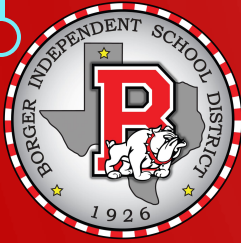
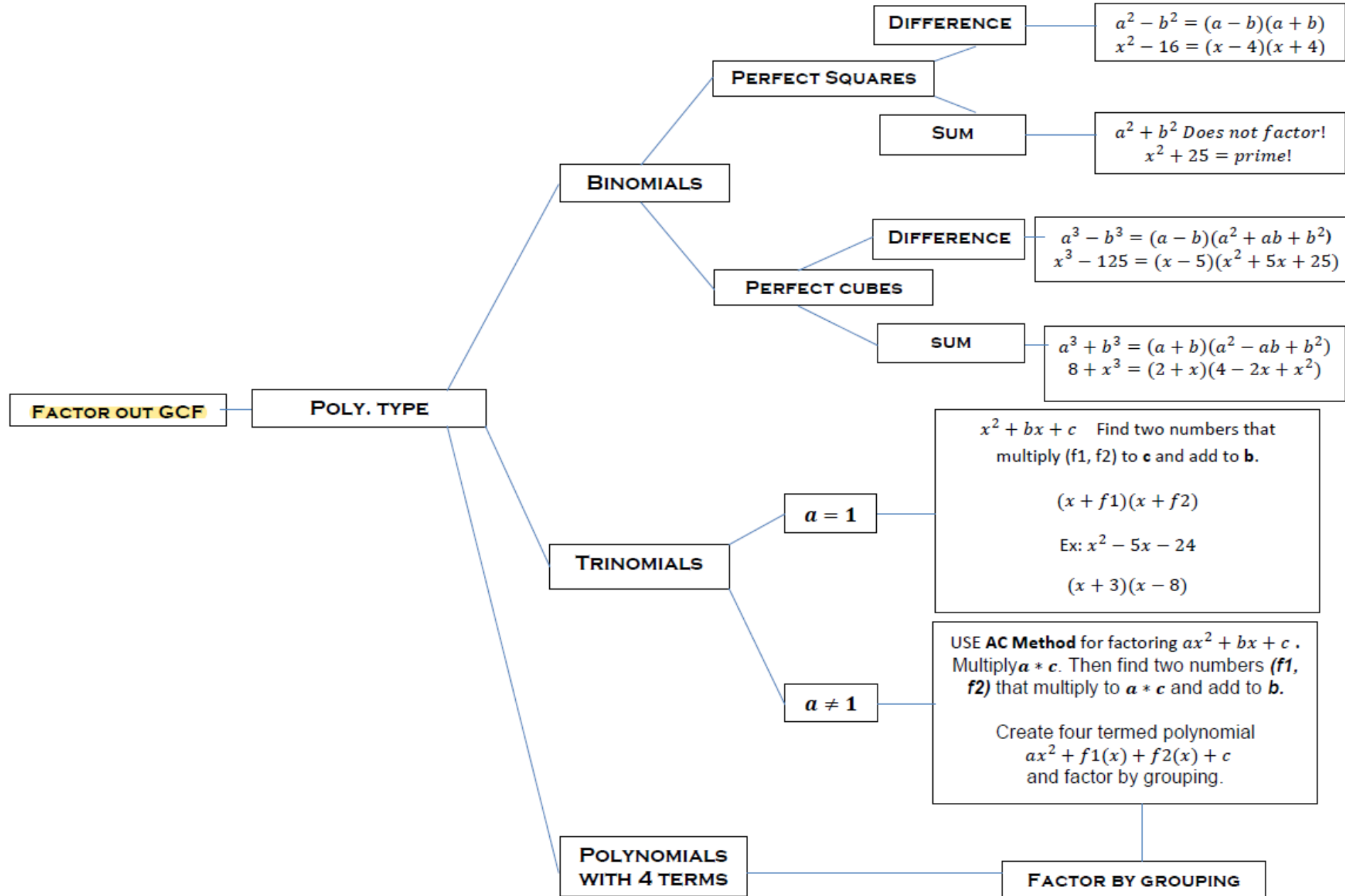
### WHAT WE NEED:

- Definition of polynomial
- Laws of Exponents
- Addition and Subtraction of Polys
- Multiplication of Polys
- Division of Polys

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

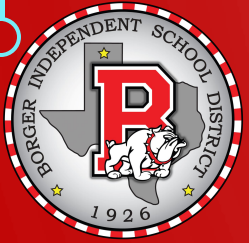
- Polynomial

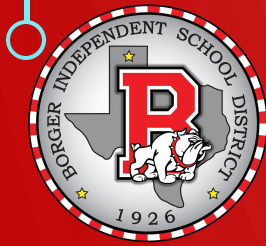
# FACTORIZING POLYNOMIALS FLOW CHART



# Factoring Polynomials

**Factoring** a polynomial expressed as the sum of monomials means finding an equivalent expression that is a product. The goal in factoring a polynomial is to use one or more factoring techniques until each of the polynomial's factors, except possibly for a monomial factor, is prime or irreducible. In this situation, the polynomial is said to be **factored completely**.





# Greatest Common Factor

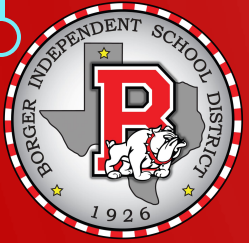
The **greatest common factor**, abbreviated GCF, is an expression of the highest degree that divides each term of the polynomial.

# The Difference of Two Squares

If  $A$  and  $B$  are real numbers, variables, or algebraic expressions, then

$$A^2 - B^2 = (A + B)(A - B).$$

In words: The difference of the squares of two terms factors as the product of a sum and a difference of those terms.



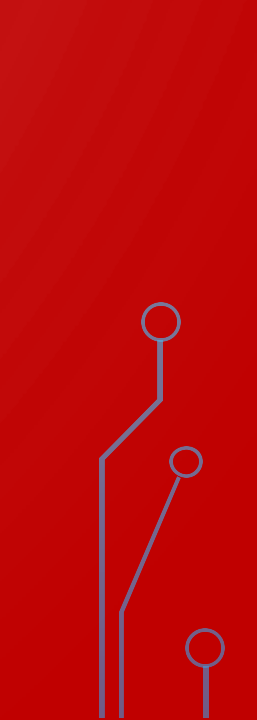
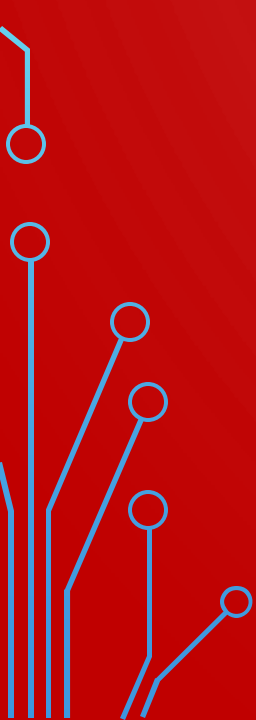


# Factoring Perfect Square Trinomials

Let  $A$  and  $B$  be real numbers, variables, or algebraic expressions.

1.  $A^2 + 2AB + B^2 = (A + B)^2$

2.  $A^2 - 2AB + B^2 = (A - B)^2$





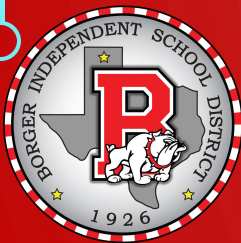
# Factoring the Sum or Difference of Two Cubes

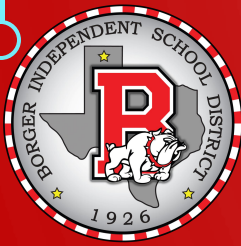
## 1. Factoring the Sum of Two Cubes

$$A^3 + B^3 = (A + B)(A^2 - AB + B^2)$$

## 2. Factoring the Difference of Two Cubes

$$A^3 - B^3 = (A - B)(A^2 + AB + B^2)$$





$$81x^4 - 900x^2 = 9x^2(9x^2 - 100) = 9x^2(3x - 10)(3x + 10)$$

$$A = 3x$$

$$B = 10$$

**High-Order Writer** - Students will analyze and evaluate the effectiveness of the writing of others and the quality of their own and others' work.

**Goal Setting** - Students will understand the qualities and contribute to high expectations that is consistent to school goals. They will demonstrate the ability to express their needs, wishes, and concerns by and in the capacity to cope with adversity that is necessary to successfully accomplish objectives. They will have the skills and knowledge to achieve personal, social, professional, and financial goals.

**Competitive Team Member** - Students will use effective leadership and group skills to generate cooperative and cooperative relationships with others in order to achieve their objectives. They will respect and understand the contributions of diverse cultures.

**Global Citizen** - Students will have basic knowledge of politics, world events, foreign affairs, and geography. They will be aware of current events and be able to analyze and make informed decisions or create effective plans to resolve and improve our world.

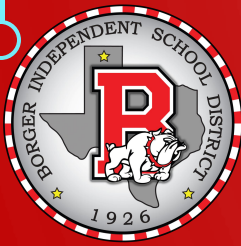
**Goal Setter with Entrepreneurial Spirit** - Students will be able to think critically, analyze situations, gain insight and take calculated risks to achieve goals and objectives. They will be able to identify the opportunities to find economic opportunities and have the confidence to think and act independently.

**Problem Solving Skills** - Students will use technology as a tool to research, analyze, and solve problems and objectives. They will demonstrate knowledge of computers, software, software applications, and the effective use of technology.

**Overcoming Obstacles** - Students will coordinate energy, time, and talent to meet the needs of themselves and others. They will display a sense of great responsibility and an entrepreneurial spirit. They will accept liability and courageously share their ideas and take personal responsibility for their actions.

1.1 (A) apply mathematics to problems arising in everyday life, society, and the workplace.

1.1 (A) apply mathematics to problems arising in everyday life, society, and the workplace.



$$x^3 - 27 = (x-3)(x^2 + 3x + 9)$$

$$A = x \quad B = 3$$

$$2^3 = 2 \cdot 2 \cdot 2 \\ = 8$$

ALPHA WINDOW

#5

$$375 - 81x^3 = 3(125 - 27x^3) = 3(5-3x)(25+15x+9x^2)$$

$$A = 5$$

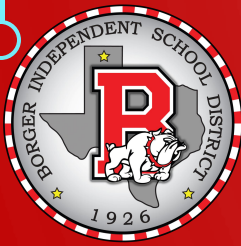
$$B = 3x$$

$$256x^3 - 500y^3 = 2(128x^3 - 250y^3)$$

$$= 4(64x^3 - 125y^3)$$

$$A = 4x \quad B = 5y$$

$$= 4(4x - 5y)(16x^2 + 20xy + 25y^2)$$



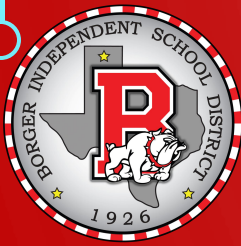
$$32x^3 + 500y^3 = 4(8x^3 + 125y^3) = 4(2x + 5y)(4x^2 - 10xy + 25y^2)$$

$A = 2x \quad B = 5y$

5

$$81x^3 + 24y^3 = 3(27x^3 + 8y^3) = 3(3x + 2y)(9x^2 - 6xy + 4y^2)$$

$A = 3x \quad B = 2y$



$$5x^3 + 81y^3$$

$$\begin{aligned} & 8x^3 - 64x^2 + x - 8 \\ &= (8x^3 - 64x^2) + (x - 8) \\ &= 8x^2(x - 8) + 1(x - 8) \\ &= \boxed{(x - 8)(8x^2 + 1)} \end{aligned}$$



$$42xy + 36xz - 7w^2y - 6w^2z$$

$$= (42xy + 36xz) + (-7w^2y - 6w^2z)$$

$$= 6x(7y + 6z) + (-w^2)(7y + 6z)$$

$$= (7y + 6z)(6x - w^2)$$