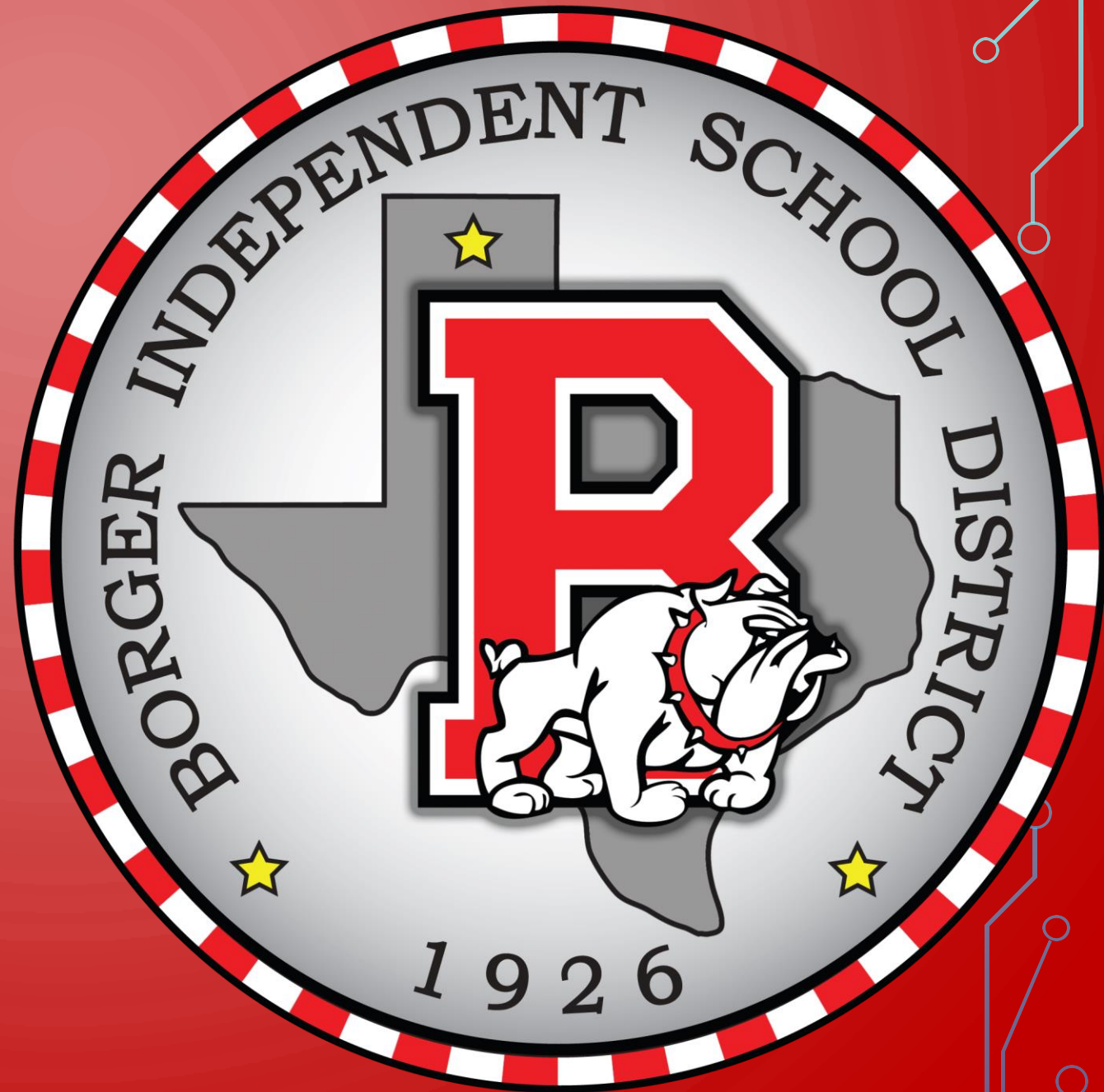
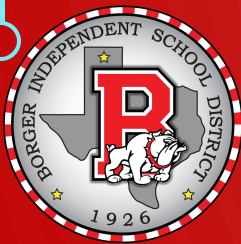


BOARD NOTES

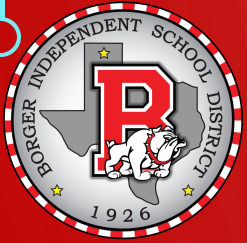
31 OCTOBER 2019



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;



We will be able to use long or synthetic division to determine the quotient of a polynomial.



WHAT WE NEED:

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

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Function

Special Products

There are several products that occur so frequently that it's convenient to memorize the form, or pattern, of these formulas. If A and B represent real numbers, variables, or algebraic expressions, then:

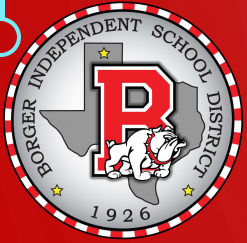
$$(A + B)(A - B) = A^2 - B^2$$

Product of the Sum and
Difference of Two Terms

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

Squaring a Binomial

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

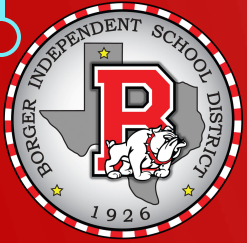


Division Algorithm for Polynomials

If $f(x)$ and $g(x)$ denote polynomial functions and if $g(x)$ is a polynomial whose degree is greater than zero, then there are unique polynomial functions $q(x)$ and $r(x)$ such that

$$\frac{f(x)}{g(x)} = q(x) + \frac{r(x)}{g(x)} \quad \text{or} \quad \begin{array}{cccc} f(x) & = & q(x) & g(x) & + & r(x) \\ \uparrow & & \uparrow & \uparrow & & \uparrow \\ \text{dividend} & & \text{quotient} & \text{divisor} & & \text{remainder} \end{array}$$

Where $r(x)$ is either the zero polynomial or a polynomial of degree less than that of $g(x)$.





$$\begin{array}{r} 175 + \overset{7}{9} \\ 9 \overline{) 1582} \\ \underline{-9} \\ 68 \\ \underline{-63} \\ 52 \\ \underline{-45} \\ 7 \end{array}$$

QUOTIENT + REMAINDER
DIVISOR | DIVIDEND

...ability to apply and understand the mathematics to solve real-world problems. They will model and understand the relationships between numbers.

Global Thinker - Students will have basic knowledge of politics, world issues, foreign affairs, and geography. They will be aware of current events and be able to analyze and make informed decisions on issues affecting the national and international arena.

Work Labor 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 survey the marketplace to find economic opportunities and have the confidence to think and act independently.

Proficient Technology User - Students will use technology as a tool to research, analyze, and complete goals and objectives. They will demonstrate knowledge of computers, internet, software applications, and the effective use of technology.

Contributing Citizen - Students will contribute energy, time, and talent to enhance the lives of themselves and others. They will display a sense of social responsibility and participate in community projects. They will exhibit honesty and integrity; exercise official powers of government; and take personal responsibility for their actions.

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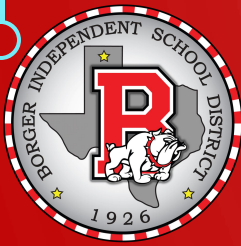
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1.1 (A)
apply
mathematics to
problems arising
in everyday life,
society, and the
workplace



$$\begin{array}{r} x^2 + 6x + 8 \\ x+4 \overline{) x^3 + 10x^2 + 32x + 32} \\ \underline{-(x^3 + 4x^2)} \\ 6x^2 + 32x \\ \underline{-(6x^2 + 24x)} \\ 8x + 32 \\ \underline{-(8x + 32)} \\ 0 \end{array}$$

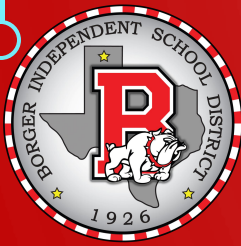
$$x^2(x+4)$$

$$6x(x+4) = 6x^2$$

$$8(x+4) = 8x$$

Place Holders FOR MISSING TERMS

$$\begin{array}{r} x^3 8 \\ x^2 - 3 \overline{) x^5 + 0x^4 - 3x^3 + 8x^2 + 0x - 24} \\ \underline{-(x^5)} - 3x^3 \\ 8x^2 + 0x - 24 \\ \underline{-(8x^2 - 24)} \\ 0 \end{array}$$



$$\begin{array}{r} 2x^3 + 2x^2 + 3x + 3 \\ 2x - 3 \overline{) 4x^4 - 2x^3 + 0x^2 - 3x - 9} \\ \underline{-(4x^4 - 6x^3)} \\ 4x^3 + 0x^2 \\ \underline{-(4x^3 - 6x^2)} \\ 6x^2 - 3x \\ \underline{-(6x^2 - 9x)} \\ 6x - 9 \\ \underline{-(6x - 9)} \\ 0 \end{array}$$

SYNTH
DIVIS

DOM

DIV



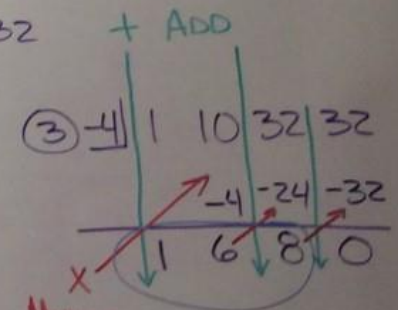
SYNTHETIC DIVISION CAN ONLY BE DONE WITH A LINEAR DIVISOR! I.E. $x - c$ OR $x + c$

$$f(x) = x^3 + 10x^2 + 32x + 32$$

DIVISOR $x + 4$

① $x + 4 = 0$
 $x = -4$

② $1 \quad 10 \quad 32 \quad 32$



MULTIPLY BY
↓

MY QUOTIENT IS $x^2 + 6x + 8$

$$f(x) = x^5 - 3x^3 + 8x^2 - 24$$
$$d(x) = x - 3$$

3	1	0	-3	8	0	-24
	+	3	9	18	78	234
	1	3	6	26	78	210

multiply by divisor

$$q(x) = x^4 + 3x^3 + 6x^2 + 26x + 78 + \frac{210}{x - 3}$$

