BOARD NOTES

30 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 define a polynomial given a function.

WHAT WE NEED:

- Definition of polynomial

I WILL BE ABLE TO COMPLETE MY HOMEWORK GIVEN THE

- Function

Laws of Exponents

If s, t, a, and b are real numbers with $a > 0$ and $b > 0$, then

$$a^s \cdot a^t = a^{s+t} \qquad \left(a^s\right)^t = a^{st} \qquad \left(ab\right)^s = a^s \cdot b^s$$

$$1^s = 1 \qquad a^{-s} = \frac{1}{a^s} = \left(\frac{1}{a}\right)^s \qquad a^0 = 1$$

A **polynomial in *x*** is an algebraic expression of the form

$$a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \ldots + a_1 x + a_0,$$

where a_n, a_{n-1}, a_{n-2}, ..., a_1 and a_0 are real numbers, $a_n \neq 0$, and n is a nonnegative integer. The polynomial is of **degree *n***, a_n is the **leading coefficient**, and a_0 is the **constant term**.

When a polynomial is in **standard form**, the terms are written in the order of descending powers of the variable. Thus, the notation that we use to describe a polynomial in *x* is:

$$a_n x^n + a_{n-1} x^{n-1} + a_{n-2} x^{n-2} + \ldots + a_1 x + a_0 .$$

Simplified polynomials with one, two, or three terms have special names: **monomial** (one term); **binomial** (two terms); **trinomial** (three terms).

Simplified polynomials with four or more terms have no special names.

Adding and Subtracting Polynomials

Polynomials are added and subtracted by combining like terms. **Like terms** are terms that have exactly the same variable factors.

Multiplying Polynomials

The product of two monomials is obtained by using properties of exponents.

We use the distributive property to multiply a monomial and a polynomial that is not a monomial.

To multiply two polynomials when neither is a monomial, we multiply each term of one polynomial by each term of the other polynomial. Then, we combine like terms.

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:

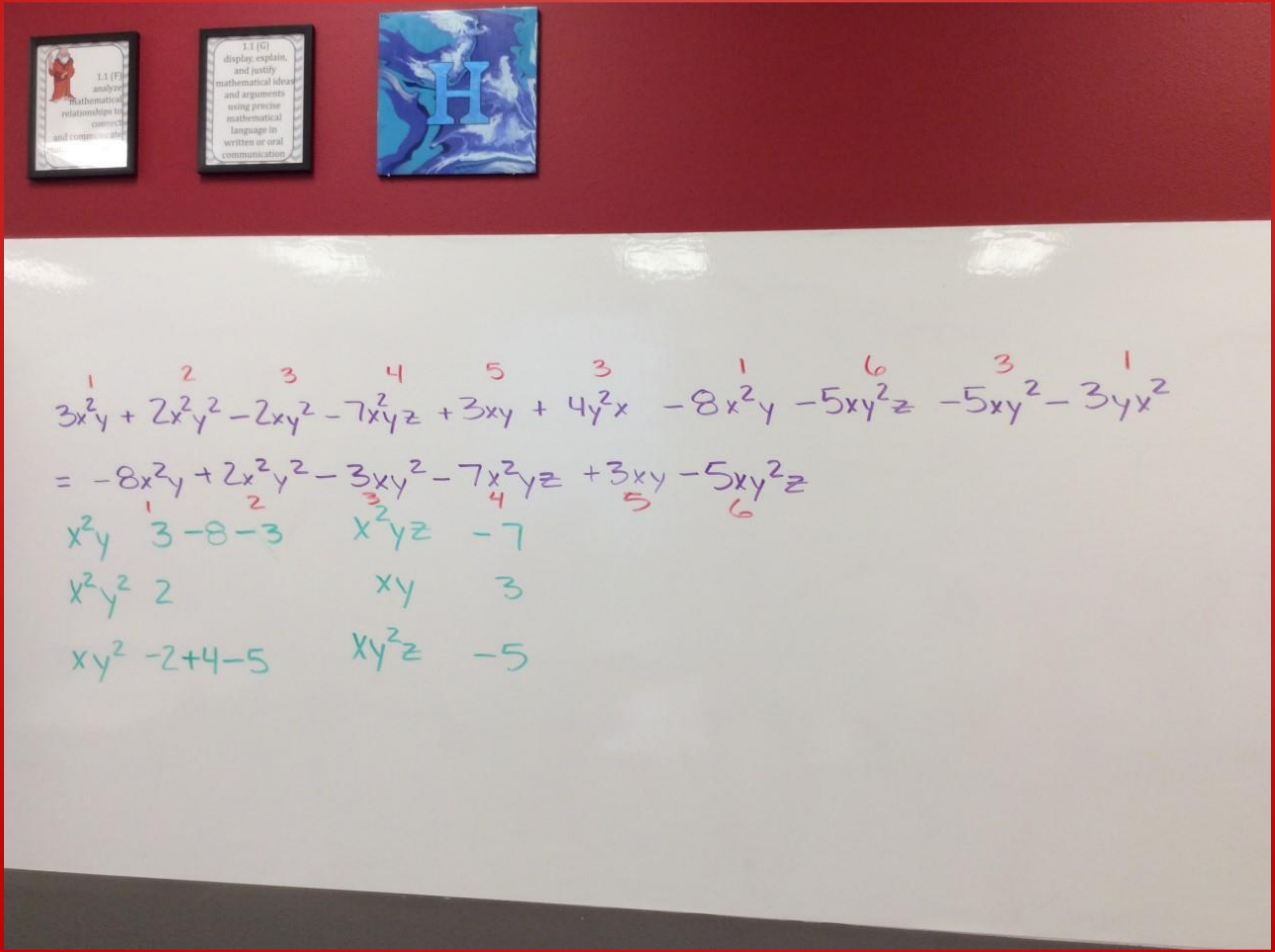
$$(A+B)(A-B)=A^2-B^2$$

Product of the Sum and Difference of Two Terms

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

Squaring a Binomial

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


1.1 (G)
display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication
H
3x²y + 2x²y² − 2xy² − 7x²yz + 3xy + 4y²x − 8x²y − 5xy²z − 5xy² − 3yx²
= −8x²y + 2x²y² − 3xy² − 7x²yz + 3xy − 5xy²z
x²y 3 −8 −3
x²y² 2
xy² −2+4−5
x²yz −7
xy 3
xy²z −5

1) $(2x^3-5x+9)+(6x^3+8x-7)$

$= 8x^3+3x+2$

2) $(3x^2-2x+8)-(5-7x+4x^2)$

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

$= -x^2+5x+3$

3) $(9xy^2-3x^2-5y^2)-(4x^2-7y^2+8x^2y)$

$= 9xy^2-3x^2-5y^2-4x^2+7y^2-8x^2y$

$= 9xy^2-7x^2+2y^2-8x^2y$

1) a^7

2) $3x^3 \cdot 8x^5$

$= (3 \cdot 8)(x^3 \cdot x^5)$

$= 24(x^{3+5})$

$= 24x^8$

3) $(-5a^2b)(-3ab^2)(2c^2)$

$= (-5 \cdot -3 \cdot 2)(a^2 \cdot a)(b \cdot b^2)(c^2)$

$= 30a^3b^3c^2$

8) $(5x+2)^2$

$$=(5x+2)(5x+2)$$

$$=25x^2+10x+10x+4$$

$$=25x^2+20x+4$$