

Hello Advanced Algebra Students!

In July: Complete the Unit 01- Algebraic Essentials Video packet (print template or take notes on loose leaf)

The link to the video is here:

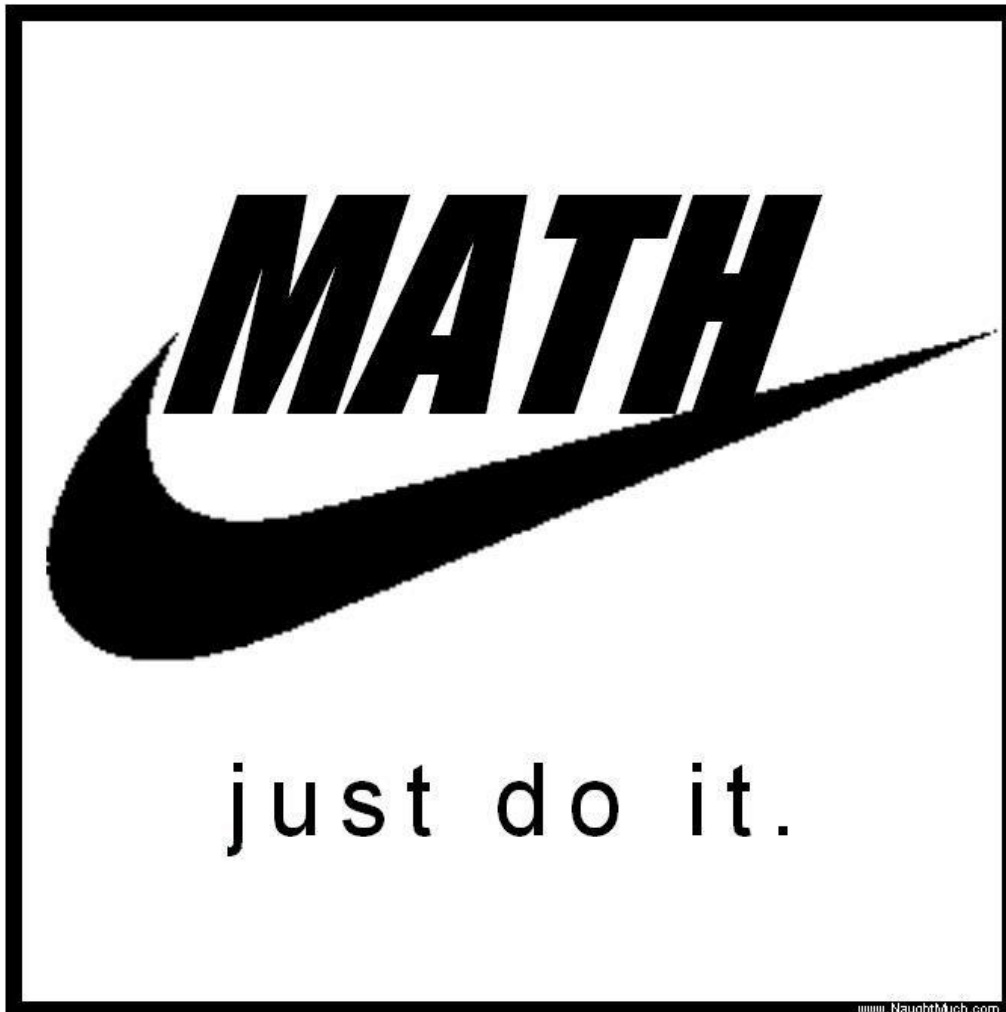
<https://www.youtube.com/watch?v=yXY4tAMXxRo>

Then, in August: Print and complete the attached 18 question A2 Summer Assignment and bring to the first day of school. Remember to demonstrate your thinking!

Please also send an email to mccollum@whsad.org to introduce yourself and stay posted on my website:
<https://sites.google.com/a/whsad.org/mcmath/>

Looking forward to meeting you 😊

~ Ms. McCollum



Algebra II CC: Video Reviews

- Organization:
 - Lesson Overview
 - CCLS Associated with this Unit
 - Terminology
 - Formulas (if formulas were introduced)
 - Specific Topical Reviews
- Headings of each slide will indicate the topical reviews. Feel free to fast-forward to the parts you want to focus on by referring to the headings
- Pause the video as needed
- Suggestion: Take notes as you watch. Organize your notes into sections (Vocabulary, Sections for each Unit, Topical Reviews, Formulas). This will provide you with an excellent study guide!

Unit 1: Video Overview

- ❖ Unit 1: Lesson Overview
- ❖ CCLS Associated with Unit 1
- ❖ Basic Terminology (4 slides)
- ❖ Real Number Properties
- ❖ Solving Linear Equations
- ❖ Basic Exponent Properties
- ❖ Multiplying Polynomials
- ❖ Calculator Use
- ❖ Summary

Unit 1: Lesson Overview

- 1.1 Variables, Terms and Expressions
- 1.2 Solving Linear Equations (A.CED.1)
- 1.3 Common Algebraic Expressions
- 1.4 Basic Exponent Manipulation (N.RN.2)
- 1.5 Multiplying Polynomials (A.SSE.2)
- 1.6 Using Tables on Your Calculator

CCLS Associated with Unit 1

- ❖ A.CED.1 - Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. Tasks are limited to exponential equations with rational or real exponents or rational functions.
- ❖ N.RN.2 - Rewrite expressions involving radicals and rational exponents using the properties of exponents.
- ❖ A.SSE.2 - Use the structure of an expression to identify ways to rewrite it. Tasks are limited to polynomial, rational, or exponential expressions.

Basic Terminology - Slide 1

- ❖ **Variable** - A quantity that is represented by a letter or symbol that is unknown, unspecified, or can change within the context of a problem.
- ❖ **Term** - A single number or combination of numbers and variables using exclusively multiplication or division. This definition will expand when we introduce higher-level functions.
- ❖ **Expression** - A combination of terms using addition and subtraction.
- ❖ **Equation** - A statement that the values of two expressions are equal (indicated by the equals sign).

Basic Terminology - Slide 2

- ❖ **Coefficient** - The numerical value proceeding the term with the highest exponential power.
- ❖ **Like-Terms** - Two or more terms that have the same variables raised to the same powers. In like terms, only the coefficients (the multiplying numbers) can differ.
- ❖ **Zero** - A numerical value that, when substituted into an expression, provides a value of zero.

Basic Terminology - Slide 3

- ❖ **Monomial** - An expression that contains one term.
- ❖ **Binomial** - An expression that contains two terms.
- ❖ **Trinomial** - An expression that contains three terms.
- ❖ **Quadrinomial** - An expression that contains four terms.

Basic Terminology - Slide 4

- ❖ **Linear** - An expression or equation where the highest exponent of one term is 1.
- ❖ **Quadratic** - An expression or equation where the highest exponent of one term is 2.
- ❖ **Cubic** - An expression or equation where the highest exponent of one term is a 3.
- ❖ **Quartic** - An expression or equation where the highest exponent of one term is a 4.

Real Number Properties

- ❖ **Commutative Property** of Addition and Multiplication
- ❖ **Associative Property** of Addition and Multiplication
- ❖ **Distributive Property** of Multiplication and Division over Addition and Subtraction

Solving Linear Equations

- ❖ **Linear Equations with One Solution**
- ❖ **Identity Equations**
- ❖ **Inconsistent Equations**

Basic Exponent Properties

- ❖ **Multiplying Expressions**
- ❖ **Dividing Expressions**
- ❖ **Raising Expressions to a Power**

Multiplying Polynomials

- ❖ You can only multiply two polynomials at a time!
- ❖ **Distribution Method**
- ❖ **Punnett “Square” Method**
- ❖ **Multiplying Three or More Polynomials**

Calculator Use

- ❖ When to use **Parentheses**
- ❖ **The STORE button:** Substituting numerical values for a variable
- ❖ Using **TABLES** to check your work

Summary of the Most Important Information

- ❖ Students should be able to:
 - ❖ Tell the difference between an **Expression** and an **Equation**.
 - ❖ Know, identify, and apply the **Commutative, Associative, and Distributive Properties** of Real Numbers
 - ❖ **Solve a Linear Equation** and identify equations that are identities or are inconsistent.
 - ❖ Apply the **Basic Exponent Properties** to multiply expressions that contain variables with integer exponents.
 - ❖ Multiply two or more polynomials using either the **Distribution Method** or the **Punnett “Square” Method**.
 - ❖ Use their calculator’s STORE button or the TABLE feature to verify their solutions to an equation or to verify the result of an expression after simplifying an expression completely

Name: _____

Date: _____

**UNIT #1 – ALGEBRAIC ESSENTIALS
SUMMER ASSIGNMENT**

Part I Questions- you must show your work to convince me WHY you are choosing 1, 2, 3, or 4.

1. Which of the following is algebraically equivalent to the sum of $4x^2 - 8x + 7$ and $3x^2 - 2x - 5$?

- (1) $7x^2 - 10x + 2$ (3) $7x^4 - 10x^2 + 2$
(2) $7x^2 - 6x - 12$ (4) $12x^4 + 16x^2 - 35$

2. When the expression $5x(2x+5) - x^2 + 4x$ is simplified it is equivalent to

- (1) $8x^2 + 21x$ (3) $9x^2 + 21x$
(2) $6x^2 + 29x$ (4) $9x^2 + 29x$

3. For $x = -6$, the rational expression $\frac{x^2 - 4x}{2x + 4}$ has a value of

- (1) $\frac{7}{5}$ (3) $-\frac{8}{3}$
(2) $-\frac{15}{2}$ (4) $\frac{11}{4}$

4. The solution to $\frac{x-8}{2} + \frac{1}{3} = 7$ is which of the following?

- (1) $5\frac{1}{2}$ (3) $-14\frac{2}{3}$
(2) $8\frac{1}{6}$ (4) $21\frac{1}{3}$

5. For which of the following values of k will the equation $5(2x+3) - 8 = 10x + k$ be an identity?

- (1) $k = 6$ (3) $k = 7$
(2) $k = -5$ (4) $k = 15$

Free Response Questions- just like with multiple choice, show your work! Circle your final answer.

12. Write the following expression in the form $ax^2 + bx + c$, where a , b , and c are real number constants.

$$(x+6)(x+5) + (x+6)(x-2)$$

13. Algebraically determine the intersection point of the lines whose equation are shown below. Show the work that leads to your answer. Check your result on your graphing calculator.

$$y = 5x + 17 \quad \text{and} \quad y = \frac{1}{2}x + 8$$

14. Consider the equation $7x - 3 = 2(2x - 3) + 3(x + 1)$.

(a) Show that $x = 5$ and $x = -1$ are solutions to this equation.

(b) This is a linear equation. Typically, we expect linear equations to have only one solution. How can this equation have at least two solutions as you showed in part (a)? Explain.

15. Given the expression $(x-5)(2x+7)$ do the following:

(a) Show that $x=5$ is a zero of the expression.

(b) What is the other zero of the expression? Show how you arrive at your answer.

16. The cubic expression $x^3 - 6x^2 - 31x + 120$ has three integer zeroes on the interval $-10 \leq x \leq 10$. Use technology to determine the zeroes. Explain how you found them.

17. If $(x^3)^2 (x^a) = x^{10}$ for all values of x , then what is the value of a ? Explain how you arrived at your answer.

18. Write the algebraic expression below in simplest terms. Then, check the equivalence between the original expression and your simplification by testing a value.

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