We, the members of the Crosby HIgh School Community are committed to providing a safe and welcoming environment that promotes a creative, innovative, and intellectually challenging learning experience to ensure that all students are prepared to become college and career ready in order to be productive members of a diverse society.

CROSBY HIGH SCHOOL COURSE SYLLABUS

Crosby Course Number & Title: Algebra 2 Foundational- 321
Instructor's Name: Ms. Daley
Semester & Year: Full Year 2018-2019

COURSE DESCRIPTION

321 ALGEBRA II

CREDIT: 1.00

Prerequisite: Successful completion of Algebra 1 and Geometry

Algebra II continues the study of equations/inequalities and introduces students to quadratic functions and Complex numbers. Advanced features of the graphing calculator are incorporated into the course work. Real- world problem solving and applications of algebra in various fields such as engineering and the sciences are a focal point of instruction. Content is aligned to the Connecticut Core Standards and the new SAT.

COURSE GOALS/LEARNING OBJECTIVES

Unit 1: Equation and Inequalities

The focus of this first unit is to solidify student understanding of linear relationships that were developed in middle school and Algebra 1. Specifically, you will be able to:

- State the variables in a situation,
- Analyze and describe the relationship between input and output variables to create an algebraic rule.
- Use a created rule to solve for either an input or output value
- Explain the meaning of an algebraic rule in context before and after values are substituted

The following exercise is an example of what this meaning making can look like at the beginning of the course.

You are organizing a trip to the movies for your class this Saturday. You need to estimate the cost of the trip, so you asked the theater for the information in the table below:

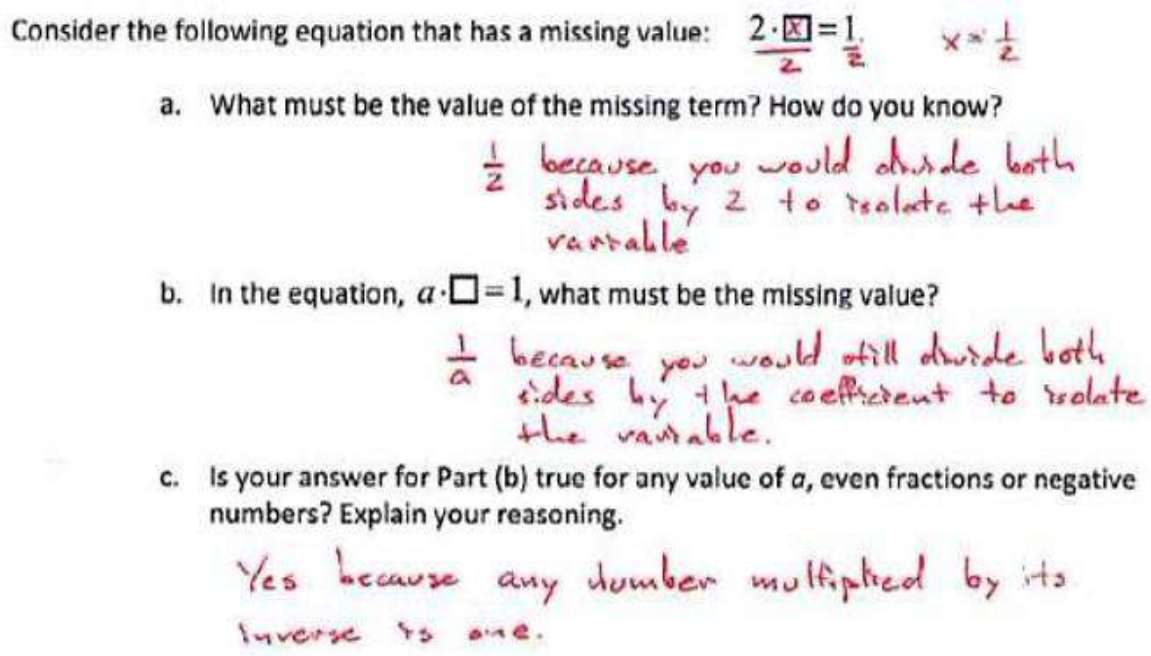
Regular Price	Students
Tickets: $10	Tickets: $5
Popcorn: $6	Popcorn: $4

1. What would the expressions below tell you?
   a. $x + y$
   The total number of adult and student tickets.

   b. $5x + 10y$
   The total cost of adult and student tickets.

   c. $9x + 16y$
   The total cost if every adult and student get a ticket and popcorn.

You also have experience solving for variables, but there is a greater emphasis on explaining their process at the beginning of this course. The following work sample shows a student demonstrating the connection between their ability to solve and a more generalized rule.



Unit 2:Functions and Their Properties

This unit focuses on you understanding of functions by examining the important concepts of function growth, transformation of functions and creating new functions from old. It also sets the groundwork for the rest of Algebra 2 by investigating functions in a general way which is then applied as needed later in the curriculum. A function is a special kind of relation where each member of the domain of the function is associated with exactly one member of the range of the function. You will studying and applying transformations to those functions. Specifically, you will understand that:

- Functions are a mathematical way to describe relationships between two quantities that vary.
- An essential characteristic of families of functions is the way in which they grow.
- Transformations of functions of the forms f(x) + k and f(x + k) have the effect of shifting functions up or down (in the case of f(x) + k), or left or right (in the case of f(x + k)).
- Transformations of functions of the forms kf(x) and f(kx) have the effect of stretching or compressing functions horizontally (in the case of f(kx)) or vertically (in the case of kf(x)).
- Graphically solving a linear system of inequalities in two variables can be used to assist in finding the solution of a Linear Programming problem.
- A graphical solution of Linear Programming can be used to identify optimal solutions to practical problems in two linear variables.

Student Exemplar:

Unit 3: Quadratic Equations

Quadratic functions are the first family of functions that you will examine in depth in this Algebra 2 curriculum. You will apply your knowledge of the effects that different transformations have on the graph of a function to the study of quadratic functions. In particular, you will examine the effects of vertical and

horizontal shifts, vertical stretches, and reflections over the x-axis and their effects on properties of quadratic functions.

Mastery of the unit will require you to develop your understanding of: (1) properties of quadratic functions based on the parameters *a*, *b* and *c* in the standard form of the quadratic function , and the parameters *a*, *h* and *k* in the vertex form of the quadratic function ; (2) different methods for solving quadratic equations; (3) the nature of the roots of a quadratic equation based on the value of the discriminant. Specifically, you will understand how to:

- Transform quadratic functions through vertical shifts, horizontal shifts and stretches relate these transformations to the standard and vertex forms of a quadratic.
- Solve quadratic equations by graphing, factoring, completing the square, and the quadratic formula.

Unit 4: Complex Numbers

As a continuation of unit 3, this unit fosters deep mathematical understanding of complex numbers. It develops the complex numbers as a mathematical structure that retains the field properties of the real numbers but also brings closure to the operation of taking the square root of a negative number. Activities in this unit develop the definition of the imaginary number *i*; the powers of *i*; the basic operations of addition, subtraction, and multiplication of complex numbers; and the solution of quadratic equations that have complex solutions in the form of complex conjugates, a+b*i* and a-b*i*. Specifically, you will understand how to:

- Add, subtract, and multiply complex numbers.
- Use the discriminant to determine the nature of the roots of a quadratic equation.
- Solve radical equations and identify extraneous solutions.
- Model real-world situations with quadratic functions and use the functions to solve problems.

REQUIRED TEXTBOOK AND MATERIALS

Algebra 2, Applications-Equations-Graphs, Larson, Boswell, Kanold, Stiff.

COURSE POLICIES

- **Attendance and Tardy Policy**
  - Attendance Policy: Please refer to the district policy located on the Crosby website or in the student handbook (https://goo.gl/nSz4er)
  - Students who are tardy to a class 3 times will serve a detention issued by the classroom teacher. Each subsequent tardy will be a referral to the office for disciplinary action.

- Late Work Policy
  - Refer to district grading policy or see the link at the bottom of the page.

- Academic Dishonesty - Academic dishonesty shall in general mean conduct which has as its intent or effect the false representation of a student's academic performance, including but not limited to:

  a. Cheating on an examination
  b. Collaborating with others in work to be presented, contrary to the stated rules of the course
  c. Plagiarizing, including the submission of
  others ideas or papers (whether purchased, borrowed or otherwise obtained) as one's own
  d. Stealing or having unauthorized access to examination or course materials

e. Falsifying records, laboratory or other data
f. Submitting, if contrary to the rules of a course, work previously presented in another course
g. Knowingly and intentionally assisting another student in any of the above, including assistance in an arrangement whereby any work, classroom performance, examination or other activity is submitted or performed by a person other than the student under whose name the work is submitted or performed.

Students should not give or receive aid during examinations, quizzes, tests or lab assignments. Students should not use answers to examinations, quizzes and tests written on cheat sheets, clothing or body parts, or obtained from others who have taken the same test prior to them. Students should not use in any written work, without proper acknowledgement, the wording of any sentence or part of a sentence of another author without acknowledgement of the original author. Students should not use calculating devices during tests where calculators are not permitted.

Plagiarism according to The American Heritage Dictionary of the English Language, Fourth Edition, 2000, is "1. A piece of writing that has been copied from someone else and is presented as being your own. 2. The act of plagiarizing: taking someone's words or ideas as if they were your own." If you copy another's work in a paper, for instance, you must put the copied material in quotation marks and footnote or endnotes. If you restate the language or thoughts of another in your own words, you are paraphrasing. Omit the quotation marks, but footnote or endnote the original source. Not to attribute the idea to the original person is to plagiarize. In general, it is better to acknowledge too many sources than too few.

Plagiarism, as defined above, is considered a serious academic offense. According to Connecticut statute, plagiarism is a criminal act and classified as a Class "B" misdemeanor. The teacher, in conference with an administrator, will exercise his/her professional judgment when determining an appropriate penalty for a project that has been plagiarized. The nature of the penalty should be relative to the magnitude of the offense. Examples of penalties that will be invoked are: a zero for the project, an "F" for the course, and/or referral to the proper authorities. The teacher and administrator will determine if the student may be permitted to complete the paper properly, or write an entire new paper properly. These and other penalties will not be imposed when the classroom teacher determines that the sources in a paper have been mis-cited. The teacher with the administration will determine the extent of grade reduction and possible suspension or referral to authorities. (Obtained from Tunxis Community College Handbook)

CODE OF CONDUCT

- Profanity
    - The use of profanity in school is unacceptable and can result in an office referral.
- Cell Phone Usage Policy
    - Cell phones **MUST BE** off and away other than when approved by the teacher for academic purposes
    - 1st offense: Confiscate, warning and notify parent, return to student at the end of the school day.
    - 2nd offense: Confiscate, in school suspension or after school detention, item to be returned to parent/legal guardian only at the end of the school day.

    - 3rd offense: Confiscate, out of school suspension, item to be returned to parent/legal guardian only at the end of the school day. (https://goo.gl/FMxNyt)

- Disposition Toward Learning

COURSE GRADING (Per District Policy)
60% Assessments
20% Classwork
10% Disposition Toward Learning
10% Homework

Student/Parent Handbook: https://goo.gl/rsFr95