R: RIGOR   R: RELEVANCE R: RELATIONSHIP

BAPTIST HILL MIDDLE HIGH SCHOOL

HOME OF THE BOBCATS
CHARLESTON COUNTY SCHOOL DISTRICT

SUCCESS BY CHOICE, NOT BY CHANCE

Mrs. Janet Hadley
Algebra II
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843-889-2276 Ext. 28560
Tutoring Hours: Thursdays 2:30-3:30
Office Hours: Mon to Fri / 12:55 – 2:25 pm

<u>Instructional Philosophy:</u> I believe that every student has the ability to succeed at math, although at different academic levels and with different learning styles. Therefore, my responsibility as a teacher is to assess at what level and with what style of instruction each student learns best, and then to use different teaching techniques to reach each student in my classroom. I also believe that part of my teaching responsibility is to encourage and motivate each student to achieve to his/her highest potential.

<u>Course Description</u>

In this course students will extend and expand upon concepts and techniques learned in Algebra 1 and Geometry. Advanced algebra skills such as systems of equations, advanced polynomials, imaginary and complex numbers, quadratics, series and sequences will be developed. Throughout the course, mathematical concepts will be taught with an emphasis on mathematical reasoning, communication, real-world application, technology, and cross-curricular connections. The content of this course are important for students' success on both the ACT and college mathematics entrance exams.

Topics to be discussed:

UNIT 1 – Linear Equations, Functions, and Graphs

UNIT 2 – Quadratic Functions, Equations, and Inequalities

UNIT 3 – Polynomial Functions and Equations

UNIT 4 – Rational Functions and Radical Functions

UNIT 5 – Exponential Functions and Equations

UNIT 6 – Sequences and Series

Key Concepts	South Carolina College- and Career-Ready (SCCCR) Algebra 2
Arithmetic with Polynomials and Rational Expressions	The student will:
	A2.AAPR.1* Add, subtract, and multiply polynomials and understand that polynomials are closed under these operations.
	A2.AAPR.3 Graph polynomials identifying zeros when suitable factorizations are available and indicating end behavior. Write a polynomial function of least degree corresponding to a given graph. (Limit to polynomials with degrees 3 or less.)
Creating Equations	The student will:
	A2.ACE.1* Create and solve equations and inequalities in one variable that model real-world problems involving linear, quadratic, simple rational, and exponential relationships. Interpret the solutions and determine whether they are reasonable.
	A2.ACE.2* Create equations in two or more variables to represent relationships between quantities. Graph the equations on coordinate axes using appropriate labels, units, and scales.
	A2.ACE.3 Use systems of equations and inequalities to represent constraints arising in real- world situations. Solve such systems using graphical and analytical methods, including linear programing. Interpret the solution within the context of the situation. (Limit to linear programming.)
	A2.ACE.4* Solve literal equations and formulas for a specified variable including equations and formulas that arise in a variety of disciplines.
Reasoning with Equations and Inequalities	The student will:
	A2.AREI.2* Solve simple rational and radical equations in one variable and understand how extraneous solutions may arise.
	A2.AREI.4* Solve mathematical and real-world problems involving quadratic equations in one variable. b. Solve quadratic equations by inspection, taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a + bi$ for real numbers a and b. *(Note: A2.AREI.4b is not a Graduation Standard.)*

A2.AREI.7	Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. Understand that such systems may have zero, one, two, or infinitely many solutions. (Limit to linear equations and quadratic functions.)
A2.AREI.11*	Solve an equation of the form $(x) = g(x)$ graphically by identifying the x-coordinate(s) of the point(s) of intersection of the graphs of $y = f(x)$ and $y = g(x)$.

Structure and Expressions	The student will:
	A2.ASE. 1* Interpret the meanings of coefficients, factors, terms, and expressions based on their real-world contexts. Interpret complicated expressions as being composed of simpler expressions.
	A2.ASE. 2* Analyze the structure of binomials, trinomials, and other polynomials in order to rewrite equivalent expressions.

	A2.ASE. 3* Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.
	
	 (Note: A2.ASE.3b and 3c are not Graduation Standards.)
	
	     b. Determine the maximum or minimum value of a quadratic function by completing the square.
	
	     c. Use the properties of exponents to transform expressions for exponential functions.

Building Functions	The student will:

	A2.FBF. 1* Write a function that describes a relationship between two quantities.
	
	 (Note: IA.FBF.1a is not a Graduation Standard.)
	
	     a. Write a function that models a relationship between two quantities using both explicit expressions and a recursive process and by combining standard forms using addition, subtraction, multiplication and division to build new functions.
	
	     b. Combine functions using the operations addition, subtraction, multiplication, and division to build new functions that describe the relationship between two quantities in mathematical and real-world situations.

	A2.FBF. 2* Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.

	A2.FBF. 3*	Describe the effect of the transformations $k(x)$, $f(x) + k$, $f(x + k)$, and combinations of such transformations on the graph of $y = f(x)$ for any real number k. Find the value of k given the graphs and write the equation of a transformed parent function given its graph.
Interpreting Functions		The student will:
	A2.FI F.3*	Define functions recursively and recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.
	A2.FI F.4*	Interpret key features of a function that models the relationship between two quantities when given in graphical or tabular form. Sketch the graph of a function from a verbal description showing key features. Key features include intercepts; intervals where the function is increasing, decreasing, constant, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity.
	A2.FI F.5*	Relate the domain and range of a function to its graph and, where applicable, to the quantitative relationship it describes.
	A2.FI F.6*	Given a function in graphical, symbolic, or tabular form, determine the average rate of change of the function over a specified interval. Interpret the meaning of the average rate of change in a given context.

	A2.FIF.7*	Graph functions from their symbolic representations. Indicate key features including intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior and periodicity. Graph simple cases by hand and use technology for complicated cases.
	A2.FIF.8*	Translate between different but equivalent forms of a function equation to reveal and explain different properties of the function. *(Note: A2.FIF.8b is not a Graduation Standard.)* b. Interpret expressions for exponential functions by using the properties of exponents.
	A2.FIF.9*	Compare properties of two functions given in different representations such as algebraic, graphical, tabular, or verbal.
Linear Quadratic,		The student will:
	A2.FLQE.1*	Distinguish between situations that can be modeled with linear functions or exponential functions by recognizing situations in which one quantity changes at a constant rate per unit interval as opposed to those in which a quantity changes by a

	constant percent rate per unit interval. *(Note: A2.FLQE.1b is not a Graduation Standard.)* b. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another.
and Exponential	
	A2.FLQE.2* Create symbolic representations of linear and exponential functions, including arithmetic and geometric sequences, given graphs, verbal descriptions, and tables.
	A2.FLQE.5* Interpret the parameters in a linear or exponential function in terms of the context.
Complex Number System	The student will:
	A2.NCNS.1* Know there is a complex number i such that $i2 = -1$, and every complex number has the form $a + bi$ with a and b real.
	A2.NCNS.7* Solve quadratic equations in one variable that have complex solutions.

Each unit will include class/homework assignments, mastery building activities such as quizzes and projects, vocabulary development, at least one performance task, summative assessment, and incorporate all 8 Mathematical Practice (MP) standards.

South Carolina College and Career-Ready Mathematical Process Standards

1. Make sense of problems and persevere in solving them.
2. Reason both contextually and abstractly.
3. Use critical thinking skills to justify mathematical reasoning and critique the reasoning of others.
4. Connect mathematical ideas and real-world situations through modeling.
5. Use a variety of mathematical tools effectively and strategically.
6. Communicate mathematically and approach mathematical situations with precision.
7. Identify and utilize structure and patterns.

<u>Web Sites that will be used:</u> IXL.com, ALEKS.com, KHAN Academy

<u>Make-Up Policy:</u> Students have 5 days to contact their teacher and make up any missing work (IF THE ABSENCE WAS EXCUSED) when they return from being absent. It is the **<u>student's responsibility</u>**. There will be no makeup work accepted after the 5 days. There will be an exception made for students with chronic illness or valid circumstances for which they were absent. Their makeup period will be decided by collaboration with guidance, the teacher, parent(s), and administration when necessary.

Grading Procedures: Students' grades will be based on a percent system:
- Home Work   10%
- Class Work   20%
- Quizzes   30%
- Tests   40%

GRADE SCALE
A = 90-100   B = 80-89   C = 70-79   D = 60-69   F = 0-59

Categories that compile your quarter and semester grade:

Classwork: Everything that we do in class will not be graded. Some grades will be participation only / some classwork assignments will be graded for correctness. Anytime that we do a project in class, that grade will count in this category. You will earn a classwork grade of some type almost every day we meet. These will be averaged and entered in power school at the end of the week.

Homework: This grade will really be a "journal" grade. I will provide each of you with a journal, which will stay on the bookshelf in my room. You will put your daily bell ringers in this journal, being careful to follow the directions on the board. I will grade them at the end of each week. The good news is, if you follow directions, this part of your grade will always be a 100%! ☺

Quizzes: These are informal assessments, on which you can use your notes. Quizzes may be announced or unannounced. Sometimes you will be allowed to work with classmates on quizzes, and sometimes you will work alone. Quizzes will generally be given once a week.

Tests: These are formal assessments. Usually, there will be no notes allowed on a test. Sometimes there will be formula sheets given for a test, or you will be allowed to construct a note card with information that you think will be helpful on the test. Tests will generally be given every two weeks.

Re-Test Policy: If you make below a 70% on a test, you can get help on the material that you did not understand and then retake the test. The two scores will be averaged together, regardless of which one is higher or lower. It is your responsibility to request a re-test and schedule a time with me to take it.

Tutoring Opportunities: I will be available to help you at the following times:

- during class / more than half of each class will involve you working on assignments or projects while I circulate around the classroom to answer your questions and help you
- at lunch, if you tell me that you are coming and I don't have lunch duty that day
- after school on any Thursday, unless I have a schedule conflict (which will be rare and always announced beforehand)
- after school on some other day, if you tell me you are coming and I don't have a schedule conflict

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Please return this form with the appropriate signatures. This form is proof that you have received, read and understood the requirements for this course as well as some of the school policies for making up assignments, tests, quizzes, etc.

If you have any questions or concerns, please contact Mrs. Hadley by email, phone and/or conference.

I have received, read and understand the course requirements and procedures for these courses: Algebra II, Prob/Stats, Pre-Calculus, and AP Calculus

_____

Parent Signature   Date   Student Signature   Date

Printed Student Name: _____