Syllabus | Pre-Algebra

Teacher

Room	219 (Media Center)
Email	crosenke@saddlebrook.com
Class Website	https://crosenke.wixsite.com/math/math-7

Course Basics

Course Description	This course prepares the student in building a solid foundation of algebraic skills, properties, and concepts. Students will be equipped with tools for successful problem-solving in areas such as fractions, decimals, percents, ratios, rates, and data analysis. Equations, inequalities, tables, graphs, and functions along with a solid review of the skills learned in the two preceding grades will prepare you for advanced courses in mathematics as well as for fields that require the use of math.
Teaching Philosophy	Mathematics is everywhere around us, and not just for supermarket shopping and balancing one's checkbook. Understanding statistics in a news article, communicating one's ideas effectively, and employing logic and reasoning are skills for living and participating in today's society. In class you will respect each others' ideas and share each other's talents. You will also have practice exploring mathematical concepts with technology, such as calculators and computer software in the computer lab. While all of these skills are important for success in math, they also carry over in other classes and somewhere in the future, to an important employment opportunity.
Required Books	Savvas Realize Online Text, Grade 8
Required Materials	3-ring binder 5 dividers College-rule paper (loose leaf) Pencils Erasers Computer (for online text or study aids only)

Class Expectations

Learning Objectives	After successfully completing this course, the student will: 1. demonstrate knowledge of number theory. 2. solve linear and radical equations. 3. use and analyze scatter plots and two-variable graphics. 4. learn to solve a system of linear equations by graphing, substitution, and elimination, and determine which method is best based on the situation. 5. transform geometric shapes and determine the similarity of triangles using established theorems. 6. use the Pythagorean theorem and its converse to determine the lengths of the sides of a right triangle and establish whether a triangle is right. 7. determine the surface area and volume of 3-D objects.
Student Responsibilities	To be successful in this course, you have certain responsibilities. 1. **You must be an active learner**, willing to show intellectual curiosity and commit time and energy to learning. You will demonstrate this in part by your participation in this course. 2. **You must adhere to rules**, and that means all school and classroom rules and policies. 3. **You must complete all assigned work and submit it on time**. The penalty for not submitting work on time is a minimum of one letter grade per day. If you are away for a

	tournament, you must make up the work within the time period permitted by school policy. 4. **There will be numerous quizzes and tests, as well as a final exam**. Make-up quizzes will be administered on your own time and must be completed within a week of your return. The final exam must be taken on the date announced. 5. **You will be expected to maintain a complete class notebook.** 6. **Completing introductory textbook reading assignments in time for class discussion dramatically heightens your enjoyment** of the class, improves your grade, and hones your academic skills.
Core Values Program	Six dedicated days towards developing and explaining the Saddlebrook Prep Core Values: – Expanding the Mind, – Building the Body, and – Shaping the Character.

Grading and Assessments

Grading Scale	A B C D F	90-100 80-89 70-79 60-69 <60
Category Weights	Homework Quizzes Tests	30% 30% 40%
Semester Grade Calculations	First Semester Grades – First Quarter is 42.5% – Second Quarter is 42.5% – Fall Semester Exam is 15%	First Semester Grades – Third Quarter is 42.5% – Fourth Quarter is 42.5% – Spring Semester Exam is 15%
	The equation for calculating the semester grade is $.425(Q_1) + .425(Q_2) + .15E = Desired\ Semester\ Grade$	
Assessments	BELLWORK Each day's bellwork will be displayed on the board or passed out as a worksheet. Everyone in class on a particular day is expected to complete the bellwork. Students who miss a day of class do not have to make-up the missed bellwork, the grade will simply be left empty on Renweb. There will be no bellwork on the day of a test or quiz. CLASSWORK AND HOMEWORK All in-class assignments will be due at the end of that class period unless otherwise stated. Assignments not turned in during class are due the next day for half credit (a zero will be placed in Renweb until the assignment is completed and turned in. Students who were absent the day homework was assigned or due will be given an incomplete in Renweb and must make up the assignment within a *reasonable* time period.) If after the second day the assignment has not been turned in the student will receive a zero on that assignment and it may not be made up. QUIZZES Quizzes will be given often (every second or third section) to assess your level of mastery of a particular topic. Quizzes may take between 10 and 50 minutes to complete. NOTEBOOKS Every student is expected to maintain an organized notebook throughout the semester. The notebook will be turned in at the end of each quarter and will be counted as one quiz grade.	

	You will be given a list of all required materials *in the week* before it is due. *Notebooks will be due the last day of the quarter.* TESTS Tests will encompass all of the material from a chapter. You can expect to have between two and three tests per grading period. PROJECTS Every student will be expected to complete a project each semester. Check the class website for details and rubrics.
Late Work	Penalties for late homework and classwork will be as follows: – Any assignment turned in one day late will have a maximum score of 80% – Assignments turned in two days late will have a maximum score of 50% – Assignments submitted three days late will result in a zero.
Make-Up Policy	It is of utmost importance that students turn in missing work in a timely manner in order to acquire the knowledge and skills they will need to succeed in their classes. As such, students must: – Complete work during excused absences or absences caused by tournaments and travel and submit work via e-mail, Dropbox, or any other method to the teachers' preference. – Submit all missed work on a day-for-day basis (miss a week, get a week to turn in assignments and make-up assessments).
Unexcused Absences	Students will receive no credit for any work (classwork, assignments, quizzes, tests, etc.) missed due to an unexcused absence from a class period or school day. ***Unauthorized travel days*** before or after a school break (Thanksgiving, Christmas, Spring Break) will result in no credit for work missed in any class. Please be sure to schedule travel at times when it will not interfere with a school day.

Rules and Policies

Class Rules	Students are expected to follow all school rules as outlined in the Student Handbook. In addition, students must also behave in accordance with the following classroom rules: 1. Phones must be placed in the basket at the front of the room every day. 2. Computers stay on the floor or in your backpack unless I tell you otherwise. 3. Be prepared for class. This means you need to have paper, pencils, and your textbook. 4. Anyone who has a phone out (which should be in the basket) during a test or quiz will automatically receive a maximum score of 70 on that test or quiz. 5. If your eyes are wandering around the room during a test or quiz I will assume you are cheating and you will be given a zero.
School Policies	MAKE-UP POLICY Time in class is unique because it involves group discussion, presentation of visual materials, and hands-on contact with the subject matter. Please choose your tournaments wisely and minimize your days away from class. When you complete work before departing for a tournament, you will vastly improve your chances for a good grade. If circumstances prevent this, contact me immediately on your return to receive assigned materials or to schedule a make-up test. NOTE: Students leaving for a tournament are required to turn in already assigned work by 7:30 am the day the student is leaving for a tournament. All work that was assigned prior to students leaving will still maintain original due dates and will not be extended due to absence. SPECIAL NEEDS I wish you to have every opportunity to learn and participate in this class. Therefore, if you have any limitations that would impede your progress in this class, please let me know at the

	beginning of the term. Any special needs requests should be on record with Saddlebrook's Guidance Counselor. RIGHT TO CHANGE SYLLABUS If necessary, some components of this syllabus may change. These changes will be announced in class, and you are responsible for any such changes.
Plagiarism and Use of AI or Online Tools	PLAGIARISM Plagiarism is the use of the words or thoughts of others without giving them proper credit. It is not limited to directly quoting a source or copying and pasting – any information beyond common knowledge must be cited correctly using the teacher's choice of citation style (MLA, APA, Chicago, etc.). Any instance of plagiarism, even accidental, may result in a zero for the assignment and referral to the administration for discipline. ARTIFICIAL INTELLIGENCE The rise of readily accessible artificial intelligence (AI) has led to serious discussion among educators concerning the application and misuse of the technology by students. Although it can be a useful tool under the right circumstances, misusing AI can have profound consequences on the development of your critical thinking skills, your ability to learn information and skills, and your academic standing. As with any tool, there are reasonable and proper applications for using AI. These include: – brainstorming ideas for a research paper or project, – finding sources of information, and – checking spelling and grammar (but not allowing AI to rewrite your sentences for you). When using AI it is important to remember that as with any other source from the internet the information must be evaluated for accuracy. The Learning Language Models (LLMs) used by the various AI chatbots pull information from all over the internet to formulate their responses – this includes from sites like Wikipedia and Reddit which are not always reliable. It is up to you to determine the veracity of information and fact from opinion. Remember that misusing AI constitutes plagiarism/cheating and is subject to the same consequences as traditional plagiarism.

Honors

Honors Applications	If you have interest in taking this class for honors credit, you will need to go to the office and request an Honors application, fill out all required information, request for the teacher to approve and sign the form, and return to the office for the Headmaster's approval.
Honors Decisions	Decisions for who will be permitted to take a course for honors credit will be based any combination of the following: – previous performance and grades in that subject the year prior (an A is required for consideration), – recommendations of previous teachers, and – diagnostic testing to determine student's knowledge of the subject.
Honors Requirements	If you choose to take this course for honors credit, you can expect the following: 1. More questions to complete on nightly assignments. 2. Additional and tougher questions on quizzes, tests, and exams. 3. More involved projects.

Course Sequence

Real Numbers	Objectives – Students will be able to write repeating decimals as fractions. – Students will be able to identify an irrational number. – Students will be able to compare and order rational and irrational numbers. – Students will be able to find square roots and cube roots of rational numbers. – Students will be able to solve equations involving squares or cubes. – Students will be able to use the properties of exponents to write equivalent expressions. – Students will be able to write a number with a negative or zero exponent a different way. – Students will be able to estimate large and small quantities using a power of 10. – Students will be able to use scientific notation to write very large or very small quantities. – Students will be able to perform operations with numbers in scientific notation. Essential Questions – How can you write repeating decimals as fractions? – How is an irrational number different from a rational number? – How can you compare and order rational and irrational numbers? – How do you evaluate cube roots and square roots? – How can you solve equations with squares and cubes? – How do properties of integer exponents help you write equivalent expressions? – What do the zero-exponent and negative exponent properties mean? – When would you use a power of 10 to estimate a quantity? – What is scientific notation and why is it used? – How does using scientific notation help when computing with very large or very small numbers?
Analyze and Solve Linear Equations	Objectives – Students will be able to solve equations that have like terms on one side. – Students will be able to solve equations with variables on both sides of the equal sign. – Students will be able to solve multistep equations and pairs of equations using more than one approach. – Students will be able to determine the number of solutions an equation has. – Students will be able to compare proportional relationships represented in different ways. – Students will be able to understand the slope of a line. Essential Questions – How do you solve equations that contain like terms? – How do you use inverse operations to solve equations with variables on both sides? – How can you use the distributive property to solve multistep equations? – Will a one-variable equation always have one solution? – How can you compare proportional relationships represented in different ways? – What is slope? – How does slope relate to the equation for a proportional relationship? – What is the y-intercept and what does it indicate? – What is the equation of a line for a nonproportional relationship?
Use Functions to Model Relationships	Objectives – Students will be able to tell whether a relation is a function. – Students will be able to identify functions by their equations, tables, and graphs. – Students will be able to compare linear and nonlinear functions. – Students will be able to write an equation in the form $y = mx + b$ to describe a linear function. – Students will be able to describe the behavior of a function and write a description to go with its graph. – Students will be able to sketch the graph of a function that has been described verbally. Essential Questions – When is a relation a function?

	– What are different representations of a function? – How can you compare two functions? – How can you use a function to represent a linear relationship? – How does a qualitative graph describe the relationship between quantities? – How does the sketch of a graph of a function help describe its behavior?
Investigate Bivariate Data	Objectives – Students will be able to construct a scatter plot and use it to understand the relationship between paired data. – Students will be able to use a line to represent the relationship between paired data. – Students will be able to make a prediction by using the equation of a line that closely fits a set of data. – Students will be able to display and interpret relationships between paired categorical data. – Students will be able to find the relative frequencies of two-way tables and interpret what they mean. Essential Questions – How does a scatter plot show the relationship between paired data? – How can you describe the association of two data sets? – How do linear models help you to make a prediction? – How does a two-way frequency table show the relationships between sets of paired data? – What is the advantage of a two-way relative frequency table for showing relationships between sets of paired data?
Analyze and Solve Systems of Linear Equations	Objectives – Students will be able to find the number of solutions of a system of equations by inspecting the equations. – Students will be able to find the solution to a system of equations using graphs. – Students will be able to solve systems of equations using substitution. – Students will be able to solve systems of equations using elimination. Essential Questions – How are slopes and y-intercepts related to the number of solutions of a system of linear equations? – How does the graph of a system of linear equations represent its solution? – When is substitution a useful method for solving systems of equations? – How are the properties of equality used to solve systems of linear equations?
Congruence and Similarity	Objectives – Students will be able to translate two-dimensional figures. – Students will be able to reflect two dimensional figures. – Students will be able to rotate a two-dimensional figure. – Students will be able to describe and perform a sequence of transformations. – Students will be able to use a sequence of translations, reflections, and rotations to show that figures are congruent. – Students will be able to dilate two-dimensional figures. – Students will be able to use a sequence of transformations, including dilations, to show that figures are similar. – Students will be able to identify and find the measures of angles formed by parallel lines and a transversal. – Students will be able to find the interior and exterior angle measures of a triangle. – Students will be able to use angle measures to determine whether two triangles are similar. Essential Questions

	– How does a translation affect the properties of a two-dimensional figure? – How does a reflection affect the properties of a two-dimensional figure? – How does a rotation affect the properties of a two-dimensional figure? – How can you use a sequence of transformations to map a preimage to its image? – How does a sequence of translations, reflections, and rotations result in congruent figures? – What is the relationship between a preimage and its image after a dilation? – How are similar figures related by a sequence of transformations? – What are the relationships among angles that are created when a line intersects two parallel lines? – How are the interior and exterior angles of a triangle related? – How can you use angle measures to determine whether two triangles are similar?
Understand and Apply the Pythagorean Theorem	Objectives – Students will be able to use the Pythagorean Theorem to find unknown sides of triangles. – Students will be able to use the Converse of the Pythagorean Theorem to identify right triangles. – Students will be able to use the Pythagorean Theorem to solve problems. – Students will be able to use the Pythagorean Theorem to find the distance between two points in the coordinate plane. Essential Questions – How does the Pythagorean Theorem relate the side lengths of a right triangle? – How can you determine whether a triangle is a right triangle? – What types of problems can be solved using the Pythagorean Theorem? – How can you use the Pythagorean Theorem to find the distance between two points? –
Solve Problems Involving Surface Area and Volume	Objectives – Students will be able to find the surface areas of cylinders, cones, and spheres. – Students will be able to use what they know about finding volumes of rectangular prisms to find the volume of a cylinder. – Students will be able to find the volume of cones. – Students will be able to find the volume of a sphere and use it to solve problems. Essential Questions – How are the areas of polygons used to find the surface area formulas for three-dimensional figures? – How is the volume of a cylinder related to the volume of a rectangular prism? – How is the volume of a cone related to the volume of a cylinder? – How is the volume of a sphere related to the volume of a cone?