



Grade 7 Mathematics, 2015-16 School Year

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Algebra 1 Syllabus 2015-16 School Year

Course Description

We begin with a study of the natural numbers, the integers, and rational numbers. Students practice the basic principles of algebraic manipulation by solving equations in one unknown and work word problems using formal algebra. Students learn about the coordinate plane and the straight line. The idea of a function is informally introduced when we consider direct proportion. Students work with functions represented by tables, graphs, and equations. The correspondence of a function's algebraic and graphic representations is emphasized. Students calculate and simplify expressions involving the four arithmetic operations, learn to multiply and divide polynomials and monomials, and practice transforming equations. Students begin to write simple proofs, demonstrating some of the properties of numbers by using algebraic expressions. In the last portion of the year, we consider inequalities and pairs of simultaneous equations.

Core Goals

- Acquire an intuitive sense of the fundamental laws of algebra and an appreciation that these laws must be precisely as they are
- Learn to read the meaning of a mathematical expression rather than the printed signs and symbols
- Acquire formal skill in manipulating basic algebraic expressions and solving linear equations for an unknown
- Understand mathematical relationships between variables in an equation both algebraically and geometrically in the coordinate plane
- Learn the roles played in mathematics by axioms, definitions, and theorems

Expectations

Take notes. In mathematics class, every important point is made both audibly in spoken words and visually in words, symbols, and drawings that go on the board. When you take notes on a solution, derivation, or proof, you think through the mathematics along with your teacher. Taking notes raises your understanding to a higher level, because you interpret, judge, evaluate, and organize what you are seeing and hearing in class while it is happening.

Do homework. Your success in this course depends on your thoughtfully preparing assignments in time for the next class, in which we will discuss your comments and answer your questions about the assignment you completed. Since each class builds upon the previous one, missing an assignment will leave you unable to follow and understand the material presented in the next class. This cascading effect once begun is hard to stop.

Expect to spend about 2 hours per week outside of class seriously working on mathematics without distractions. If you stick to this, you will find you hardly need to study before an exam, because you will already know the material.

Participate in class. You will understand the ideas of mathematics more quickly and more deeply by participating in class discussion. When your teacher or another student asks you to elaborate on an idea you have expressed, you have a wonderful opportunity to explore your own thoughts and practice articulating them clearly. Clarity of expression and clarity of thought develop together. The give and take of classroom discussion, though messy, is an essential and irreplaceable element in building your understanding of mathematics.

If as described above, you take notes, do homework, and participate, then you will find your understanding so solid and your skill so proficient that you will not need to study for exams.

Required Materials

Textbook & Resources

Beginning Algebra, 3rd edition. Ray Tenebruso.

An electronic copy of the student's print textbook is at my web site.

Web. I maintain an easy to use website. This is a valuable resource. If you are absent from class, check here for the day's assignment and any handouts or problem sets that were given out in class. If you lose a problem set or a handout, get another one here. Parents will find the definitive answer to the question: "Do you have any mathematics homework?" I update the site every weekday almost always by 5:30 P.M.

At my web site you will find:

- The current assignment and all past assignments.
- PDF copies of **every** item handed out in class.
- Copies of exams and quizzes are not included.

- Notes, if the day's topic was especially complex.
- Occasional photograph of chalk board
- An electronic copy of your textbook.
- Links to sites of mathematical interest.

To reach my web site, please go through the Blackbaud portal.

Required Materials

An organized three-ring binder with five divider tabs for class notes, handouts, homework, quizzes, and exams, a red correcting pencil, several sharpened pencils, and a good quality eraser are required. Bring these items, along with your textbook and completed assignment, to class each day.

Course Outline

- The Integers: prime numbers, prime factors, common divisors, common multiples, greatest common divisor, least common multiple, addition, subtraction, multiplication, and division of signed numbers
- Letters and expressions, evaluating expressions, calculating linear expressions; rational expressions
- Solving linear equations, including rational equations
- Equations involving simple proportion: rate of change, direct and inverse proportion, graphing functions on the coordinate plane
- Monomials and polynomials: addition, subtraction, multiplication; exponential expressions
- Inequalities.
- Pairs of simultaneous linear equations in two unknowns

Grading & Evaluation

Your semester mastery grade is determined by full period exams, brief quizzes, and any graded assignments. Your scores on quizzes will make up no more than 20% of your semester grade. Exams and graded assignments will make up no less than 80%. Exams and quizzes will have strict time limits, because they seek to assess your level of proficiency with the material that we recently covered. Proficiency often means that you can work a problem in a couple of minutes using the recent material we covered, rather than suffering 15 minutes of furious labor because you were unfamiliar with the recent material we covered.

It's a fact: homework is the single most important ingredient in determining your grade on examinations and quizzes, and therefore your course grade. If you slack off on homework, you will get a poor course grade.

A quiz may be given at any time without prior announcement. Expect a short quiz about once per week. Your lowest quiz score will be dropped. Exams will be announced well in advance and will require a full class period to complete.

Each semester, you will be allowed to retake one exam of your choice, provided that (1) you completed every homework assignment relevant to the material on the exam prior to the date of the original exam and (2) reworked every homework problem with which you had trouble prior to the date of the original exam. The grade obtained on the retake will be the grade used to complete your semester grade even if that grade is lower than the grade you obtained on the original exam.

Absence Policy

If you are absent for a quiz or an exam, you are expected to arrange to make it up. If you miss a class meeting, borrow another student's notes to copy. Discussing those notes with the other student will further benefit both you and your kind classmate. If you want to do some homework, you might check my web site. I sometimes post assignments during the day, instead of at the end of the day, in case an absent student feels like doing homework. I definitely do not expect you do homework while you are ill.

Late Work Policy

Homework is considered practice, so you will not be graded on it. There will be some graded assignments including take-home exams. The MCDS Middle School late work policy will apply to graded assignments. This policy states that for each day work is late, 10% will be deducted from the grade, up to 50%. If the work is never turned in, it will count as zero.

Getting Help

Please seek my help outside of class. I teach because I love to do mathematics with you. The student who makes the extra effort to get help when needed makes a very good impression on the teacher. Do not expect the impossible, though. If you have not kept up with assignments, meeting with me for an hour as the exam date approaches is not going to do you much good. If that was all it would take for you to do well, I would not be giving all these assignments in the first place. Remember that asking specific questions rather than saying, "I don't get it" will bring you the most useful help as well as evidence the effort you made in trying to master the material.