Mathematics 8: Algebra Geometry I
Course Syllabus
2009-2010

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Please use e-mail rather than calling. We can arrange by e-mail a time to meet in person or talk on the telephone.

❖ Highlights of this coming year

In 8th grade mathematics, you will

- Develop skill in working with expressions including quadratics that are more complicated and sophisticated than those encountered in seventh grade.
- Use knowledge of the axioms and basic theorems of algebra to acquire clarity concerning algebraic subtleties that might otherwise cause confusion.
- Rewrite a polynomial as a product of linear factors and find solutions to selected quadratic equations by factorization.
- Understand what is definition in mathematics and the role that it plays in the discovery of mathematical truth. In particular, we will define rational and irrational numbers.
- Begin to read and to write simple proofs. We will prove that the square root of two is irrational and certain other theorems concerning rational and irrational numbers.
- Study the straight line algebraically and geometrically in the coordinate plane, thereby enhancing your inclination and ability to see mathematical relationships both algebraically and geometrically. This will help you throughout and beyond school and college mathematics.

❖ Course Description

Students use the skills from beginning algebra to calculate expressions involving the four arithmetic operations and to solve linear equations. They begin to demonstrate properties of integers and writing short proofs. They solve linear inequalities, simultaneous linear inequalities, and pairs of simultaneous equations. Students consider the linear function in the coordinate plane. The correspondence of the line's algebraic and graphic representations is emphasized. Students practice finding the equation of a line, given two points or given a point and a slope; they write the equation of the line through a specific point and parallel or perpendicular to a given line. Students learn to factor polynomials, and they solve quadratic equations and equations that are quadratic in form using a variety of methods.

❖ Textbook

Japanese grade 8 Mathematics. Kunihiko Kodaira, editor. You must return in good condition the same textbook you were issued.

❖ Mastery Grade

Your trimester mastery grade is determined by full period exams, brief quizzes, and any graded assignments. Homework is *not* figured into the mastery grade. Your scores on quizzes and any graded assignments will make up 20% of your trimester grade. Exams will make up 80%.

❖ Quizzes and Exams

You can expect
- a quiz nearly every week,
- an exam at the end of a topic or at the end of a group of related topics.

A quiz may be given at any time without prior announcement. Your lowest quiz score will be dropped. Exams will be announced well in advance and will generally require a full class period to complete. If you are absent for a quiz or an exam, *you* are expected to arrange to make it up.

❖ Effort

Good effort is shown when
- you do all homework carefully and thoughtfully, even if you do not get the correct answer;
- you ask specific questions rather than saying, "I don't get it";
- you are eager to learn at the very start of class, as evidenced by being quietly seated at an uncluttered desk, and equipped with pencil (not pen), eraser, notebook, and homework;
- you thoughtfully, respectfully, and politely contribute to class discussions;
- you ask questions to better understand a topic or to explore it;
- you start without delay on in-class work and stick to it; and
- you take notes during class and keep an organized notebook.

❖ Notebooks

An organized three-ring binder is required.

❖ Class 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 do the mathematics along with your teacher. It is like climbing a mountain step by step with an experienced guide, rather than merely hearing or seeing some directions. Taking notes raises your thinking to a higher level, because you interpret, judge, evaluate, and organize what you are seeing and hearing in class while it is happening.

❖ Homework

Doing assignments on time is the most important action you can take to succeed in mathematics.

In mathematics, your learning depends on your thoughtfully working the assigned problems and staying caught up. This is the best way to prepare for exams and to understand new material as it is presented in class. **Expect to spend 2 - 3 hours per week outside of class working on mathematics.**

❖ Calculators

An inexpensive ($20 or less) scientific calculator will be useful. Exams will be written so that students who may own a graphing calculator will not have an unfair advantage over those who do not.

❖ Web resource

I will maintain a simple web site at **http://math.mnrt.net/** . I hope that parents and students will make use of this. If you are absent, you can get the day's assignment and any handouts from class at this site. I usually update it by about 5:30 p.m.

Here you will find
- the current assignment and all past assignments,
- copies of everything handed out in class including problem sets, and solutions to selected problems,
- my notes when the day's topic was especially complex,
- links to sites of mathematical interest.

This is not intended as a substitute for keeping an assignment notebook, which you are required to do. If you are absent from class, check here for the day's assignment and any handouts given during class. Parents will find the definitive answer to the question: "Do you have any mathematics homework?"

Please follow the link for *Standards for Success*. These excellent standards will help you to understand how and why what we are doing in class is preparing you for future success.

❖ 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.

❖ Knowing and doing mathematics

Mathematics is *not* a grab bag of facts, procedures, techniques, and tricks. Knowing mathematics means using a few basic ideas with skill, insight, and understanding. It means you can often solve a problem seemingly *unlike* any you have already done or seen done.

You improve in mathematics through thoughtful and purposeful practice and discussion. Watching someone else do mathematics and feeling like you get it is no guarantee that *you* can do it on your own. Jump in! Question, discuss, argue, and practice!

❖ Parents

Thank you for reviewing this with your student. Throughout the school year, please contact me when you have questions, comments, or concerns. I check e-mail whenever I return to my desk. E-mail will catch my attention the quickest, then we can arrange to talk by phone or meet in person. I try to check phone messages at the end of the day.

❖ Parent signature

Please review this with your parents and ask a parent to sign it below. I will not collect this, but I will check in class for a parent's signature.

Parent signature _____ .