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## Grade 8 Algebra 2 2010-11 School Year

### 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.

### Core Goals

- 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.
- Acquire the inclination and ability to see a composite number as a product of its factors.
- 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.

### Expectations

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.

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!

In mathematics, your learning 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. This is the best way to prepare for exams and to understand new material as it is presented in class. Expect to spend about 3 hours per week outside of class working on mathematics. If you slack off and fall behind, it will be extremely hard to catch up.

### **Textbook & Resources**

*Japanese grade 8 Mathematics*. Kunihiko Kodaira, editor. And *Japanese grade 9 Mathematics*. Kunihiko Kodaira, editor. You must return in good condition the same textbooks you were issued.

### **Web**

I will maintain a simple web site at [www.math.mnrt.net](http://www.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 update the site every weekday almost always by 5:30 PM.

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, but not including in-class exams and quizzes,
- 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?"

### **Required Materials**

An organized 2-in. three-ring binder with five divider tabs. Pencils. High quality erasers that do not smudge. Red correcting pencils. 6-in. plastic see thru ruler.

### **Course Outline**

Consult Table of Contents in the course textbooks. We follow it exactly.

### **Grading & Evaluation**

Your trimester mastery grade is determined by full period exams, brief quizzes, and any graded assignments. Your scores on quizzes will make up 20% of your trimester grade. Exams and graded assignments will make up 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.

**Homework, although not graded, is the single most important factor in determining your grade on examinations and quizzes, and therefore your trimester grade.**

A quiz may be given at any time without prior announcement, although you can 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.

In sports, music, and theater you play or perform like you practice. Sloppy practice, sloppy performance. Just as you would insist on doing your personal best when practicing a sport at which you desire to excel, so too you should insist on your best when you practice mathematics.

### **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, do borrow another student's notes to copy. Discussing those notes with the other student will further benefit both you and your kind classmate.

### **Late Work Policy**

Homework is considered practice, so you will not be graded on it. If homework is not-completed, I will ask you to report to the library during lunch where you will have the opportunity to complete it. Speaking as both a teacher and as a student of mathematics, I assure you that unless you attend to homework when it is assigned, you will not score as high as you might have on exams and quizzes. That is because you will not have learned the material as well as you would have by keeping up with assignments.

### **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.

### **Signature**

I have read and discussed this syllabus with my child \_\_\_\_\_  
Parent's Signature

I have read and discussed this syllabus with my parent(s) \_\_\_\_\_  
Student's Signature

