



*Northern Valley Regional High School
Demarest & Old Tappan Mathematics
Department Algebra I*

Philosophy

In secondary school, all students should learn an ambitious common foundation of mathematical ideas and applications. This shared mathematical understanding is as important for students who will enter the workplace as it is for those who will pursue further study in mathematics and science. All students should study mathematics in each of the four years that they are enrolled in high school.

Because students' interests and aspirations may change during and after high school, their mathematics education should guarantee access to a broad spectrum of career and educational options. They should experience the interplay of algebra, geometry, statistics, probability, and discrete mathematics. They need to understand the fundamental mathematical concepts of function and relation, invariance, and transformation. They should be adept at visualizing, describing, and analyzing situations in mathematical terms. And they need to be able to justify and prove mathematically based ideas.

As success in mathematics is predicated on an understanding of algebra, as well as appropriate learning skills, this course serves both as an introduction to elements of algebra and an introduction to the necessary characteristics of scholarship that high school mathematics study demands.

Any course in algebra must provide an opportunity for students to study mathematical ideas in depth through applications and practical problems, as well as providing opportunities to develop skill. To this end, an emphasis on problem solving is one of the three main philosophies underlying this curriculum.

Given the present state of technology, students must capitalize on the facility provided by both calculators and computers. Technology permits students to investigate the connections of mathematics in a dynamic way and to see mathematics as an integrated whole. Accordingly, a second goal of this course is to introduce students to the graphing calculator. (It should be noted that a calculator might not be allowed on all portions of some state-sponsored assessments.)

Our third philosophy is one of expectation. As this curriculum is rather extensive, teachers do not have time, nor should they feel obliged, to re-teach topics that should have been previously learned. This point does not preclude

any teacher briefly reviewing pre-algebra topics. However, instruction will be carried out in a manner that assumes competence with topics from previous coursework.

Topics for Study

1. Equations
2. Linear Equations and Inequalities
3. Systems of Equations and Inequalities
4. Regression Models and Linear Functions
5. Functions
6. Polynomials and Factoring
7. Irrational Numbers, Quadratic Equations, and Quadratic Functions
8. Inequalities
9. Statistics

Assessment

Assessments in Algebra I will be consistent with the rigor and difficulty that is necessary to prepare students for advanced study.

Students will be assessed using a variety of assessment models. These will include:

1. Tests
2. Quizzes
3. Projects
4. Homework

When calculating a marking period grade, the specific value of each assessment will be determined by the classroom teacher and posted in PowerSchool.

Each student is required to keep a notebook containing notes, handouts, and all homework assignments.

It is the philosophy of the Mathematics Department that tests and quizzes should critically measure the student's depth of understanding and fluency of skills. Also, with the exception of an occasional question on an assessment, teachers do NOT award "extra credit".