

JUNIOR HIGH MATHEMATICS DEPARTMENT

8 MATH (STANDARD)

Contact Information

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The Department's Educational Philosophy

The study of mathematics will enhance the ability of all students to problem solve and to reason. Through a strong standardized departmental program that emphasizes problem solving, communicating, reasoning and proof, making connections, and using representations, students will develop organizational skills, self-confidence and a positive attitude toward mathematics. Our curriculum matches that of the Massachusetts Mathematics Curriculum Framework, and we are philosophically aligned with the National Council of Teachers of Mathematics Standards.

Guiding Principles

- All students can learn mathematics.
- Mathematical ideas should be explored in ways that stimulate curiosity, create enjoyment of mathematics, and develop depth of understanding.
- Effective mathematics programs focus on problem solving and require teachers who have a deep knowledge of the discipline.
- Technology is an essential tool in a mathematics education, and all students should gain facility in using it where advantageous.
- All students should have a high-quality mathematics program.
- Assessment of student learning in mathematics should take many forms to inform instruction and learning.
- All students should recognize that the techniques of mathematics are reflections of its theory and structure.
- All students should gain facility in applying mathematical skills and concepts.
- All students should understand the role of inductive and deductive reasoning in mathematics and real life situations.

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Course Frequency: Full-year course, five times per week

Credits Offered: None

Prerequisites: None

Background to the Curriculum

This course is now using the 2004 edition of the McDougal Littell Middle School Math 3 text by Larson, Boswell, Kanold, and Stiff. The text is supplemented with designated materials from the “Algebra with Pizzazz” resource binder. Chapters 1-7, 9, 11, 12, and 13 are covered and address the Massachusetts State Frameworks, as well as the 2000 edition of the National Council of Teachers of Mathematics. The course is, therefore, well aligned with national and state standards. Teachers utilize other materials to enhance and deepen the curriculum content where appropriate and make minor changes after consultation with the BDL.

Core Topics/Questions/Concepts/Skills

Simplifying numerical and algebraic expressions using integer, fractional, and decimal coefficients

Utilizing the commutative, associative, and distributive properties of algebra with numerical and algebraic expressions

Applying the laws of exponents

Solving equations with one variable

Solving problems using rates, proportions, and percents

Simplifying polynomial expressions using addition, subtraction, and multiplication

Analyzing situations involving probability and statistics

Graphing and analyzing linear equations

Course-End Learning Objectives

<u>Learning objectives</u>	<u>Corresponding state standards, where applicable</u>
1] identify parts of a coordinate plane and locate and plot ordered pairs	6.G.04
2] make a scatter plot, box and whisker plot, stem and leaf plot, and line of best fit	8.D.02
3] calculate and use mean, median, mode, and range to rank options	8.D.03
4] calculate the probability an outcome will occur	8.D.04
5] identify the number of favorable outcomes	8.D.04
6] identify the number of favorable outcomes and possible outcomes of an event	8.D.04
7] recognize events in probability experiment as dependent or independent	8.D.04
8] use the fundamental counting principle to find the number of possible outcomes	8.D.04
9] apply the Pythagorean Theorem	8.G.4
10] solve rate problems involving simple interest and distance	8.M.5
11] solve percent problems	8.N.01
12] compute in scientific notation	8.N.04
13] prime factor expressions	8.N.05
14] simplify and perform operations with fractions and decimals	8.N.10
15] represent and solve problems using ratios and proportions	8.N.3
16] solve one, two step, and multi-step equations and inequalities	8.P.7
17] solve literal equations using inverse operations	8.P.7

Assessment

Students are generally assessed by in-class tests and quizzes, which are administered regularly throughout a marking period. Generally, two quizzes are equivalent to a test. The students' attitude, effort, and quality of homework preparations will also impact their term grade to a small degree. Teachers informally assess students every day by asking pivotal questions, as well as questions involving mechanics or concepts. A standardized midyear examination and final examination are administered to all students in this course in order to assess their long-term retention of the course material.

Technology Learning Objectives Addressed in This Course

(This section is for faculty and administrative reference; students and parents may disregard.)

<u>Course activity: skills &/or topics taught</u>	
1] Introduction to the use of graphing calculators in areas such as graphing of linear functions, solving systems of linear equations, and introducing the concept of data analysis and best fit lines.	

Materials and Resources

Teachers use other texts for supplementary ideas and more challenging examples, and “Algebra with Pizzazz” puzzle sheets. Worksheets that coordinate to each lesson are used.

Graphing calculators are utilized throughout the course to enhance various concepts and skills.