Toms River Regional Schools
Course Proficiency Outline
Grade Seven Mathematics

The focus and the goal of the mathematics curriculum is to enable all children to function in the 21st century with the mathematical skills, understandings, and attitudes that they will need to be successful in their careers and daily lives.

To compete in a global economy, students must be able to solve problems, reason effectively, and make logical connections. Future careers requiring mathematical knowledge and skills in areas such as data analysis, problem-solving, pattern recognition, statistics, and probability are growing exponentially.

To meet these challenges the NJ Department of Education created a set of mathematical standards. In understanding the seventh grade mathematics curriculum one needs to understand the standards. This outline seeks to provide an overview of the standards along with the content and classroom expectations for all seventh grade students in the Toms River Regional School District.

The vision, if it is to be realized, must include learning environments with the following characteristics, as described in the mathematics standards:

- Students excited by and interested in their activities.
- Students learning important mathematical concepts rather than simply memorizing and practicing procedures.
- Students posing and solving meaningful problems.
- Students working together to learn mathematics.
- Students writing and talking about math topics every day.
- Students using calculators and computers as important tools of learning.
- Students whose teachers who have high expectations for ALL of their students.
- Students being assessed by a variety of assessment strategies, not just traditional short-answer tests.

The equity and excellence component of the vision has four features:

- Fostering respect for the power of mathematics.
- Setting high expectations.
- Providing opportunities for success.
- Encouraging all students to go beyond the standards.

Standards and Strands

There are five standards altogether, each of which has a number of lettered strands. These standards, and their associated strands, are enumerated below:

4.1. Number and Numerical Operations

A. Number Sense
B. Numerical Operations
C. Estimation

4.2. Geometry and Measurement

A. Geometric Properties
B. Transforming Shapes
C. Coordinate Geometry
D. Units of Measurement
E. Measuring Geometric Objects

4.3. Patterns and Algebra

A. Patterns and Relationships
B. Functions
C. Modeling
D. Procedures

4.4. Data Analysis, Probability, and Discrete Mathematics

A. Data Analysis (Statistics)
B. Probability
C. Discrete Mathematics--Systematic Listing and Counting
D. Discrete Mathematics--Vertex-Edge Graphs and Algorithms

4.5. Mathematical Processes

A. Problem Solving
B. Communication
C. Connections
D. Reasoning
E. Representations
F. Technology

Content, Texts, and Materials

Students in grades seven and eight will primarily be using the materials from *Connected Mathematics*, a complete mathematics curriculum that helps students develop understanding of important concepts, skills, procedures, and ways of thinking and reasoning in number sense, geometry, measurement, algebra, probability, and statistics.

Other materials will be supplemented as necessary.

Connected Mathematics is guided by the following five themes:

1. *Connected Mathematics* is organized around a selected number of important mathematical content and process goals, each of which is studied in depth.

2. *Connected Mathematics* emphasizes significant connections, meaningful to students, among various mathematical topics and between mathematics and problems in other disciplines.

3. The instruction in *Connected Mathematics* emphasizes inquiry and discovery of mathematical ideas through the investigation of rich problem situations.

4. *Connected Mathematics* helps students grow in their ability to reason effectively with information represented in graphics, numeric, symbolic, and verbal forms and to move flexibly among these representations.

5. The goals and teaching approaches of *Connected Mathematics* reflect the information processing capabilities of calculators and computers and the fundamental changes such tools are making in the way people learn mathematics and apply their knowledge of problem solving.

The Connected Mathematics materials categorized by content area for grade seven:

Standard 4.5, Mathematical Processes, is integrated into all of the following clusters:

Number Sense (Standard 4.1)

Bit and Pieces II – Understanding rational numbers to solve problems; developing understanding of and skill in adding, subtracting, and multiplying fractions and decimals.

Comparing and Scaling – Reasoning proportionally; using rations, rates, and percents to express comparisons

Accentuate the Negative – Understanding integers; adding, subtracting, and multiplying integers

Measurement (Standard 4.2)

Filling and Wrapping – Measuring three-dimensional shapes; finding surface area and volume of prisms, cylinders, spheres, and cones.

Geometry (Standard 4.2)

Stretching and Shrinking – Recognizing and creating similar figures; exploring scale factors and the relationship between scale factor, area, and perimeter.

Algebra (Standard 4.3)

Variables and Patterns – Understanding variables; representing relationships with graphs, tables, written rules, and equations.

Moving Straight Ahead – Investigating linear relationships; representing linear relationships with tables, graphs, and equations; solving simple linear equations.

Probability (Standard 4.4)

What Do You Expect? – Calculating probabilities and expected values; designing simulations.

Statistics (Standard 4.4)

Data Around Us – Developing skill in reasoning with large numbers; writing large numbers using scientific notation

Materials

1. The Connected Mathematics Program, 2002. Prentice Hall.
2. New Jersey Pre-GEPA Mathematics, 2000. Educational Design.
3. Accompanying supplementary materials.
4. Use of computers, calculators, and various manipulative materials.

Classwork

1. There will be lectures, discussions, cooperative work, note taking, audio-visual materials, and regular tests and quizzes.
2. There will be hands on laboratories and demonstrations.
3. General principles of career education, attitudes, work habits, and competencies, as well as information relating to careers in the mathematics will be explored where appropriate.
4. Assignments will be given related to lesson objectives. These assignments will be graded and reviewed by teachers and pupils.

Evaluation

1. Students will bring needed materials to class and be ready to work.

2. Students will complete classwork and homework assignments in a timely fashion.

3. Students will be expected to complete assigned reports and/or projects as specified by the teacher.

4. Students will prepare adequately for and successfully complete quizzes, tests, and the final exam.

5. Students will be expected to participate in class.

6. The final grade represents the teacher's professional judgment of student performance. All of the items above are included in the final evaluation process.

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