Senior Math
Course Outline

(Special Education Replacement Class)

- 5 Credits
- Updated March 2008/Revised January 2009
- Prerequisites: Integrated Math 11 or its equivalent.
- Senior Math is a fourth year elective class of our practical level program. The skills developed in Integrated Math 9, 10, and 11 will be extended and students will be expected to apply them to more complex situations. This course serves as preparation for a post-secondary college math course. The areas emphasized are number senses, numerical operations, percentages, ratios, proportions, probability, data analysis, algebraic concepts, as well as linear equations and systems of equations. The course is also coordinated with the Core Content Curriculum Standards. Mathematical reasoning and problem solving are emphasized throughout the course.
- The curriculum and course objectives are followed; however, the student's Individualized Education Plan dictates any accommodations or instructional strategies utilized. (These are included below within the outline.)
- Students will be using a wide array of materials including teacher made worksheets, teacher made assessments, *Fantasy Football and Mathematics* text and student workbook, *Algebra* and *Pre Algebra* texts, as well as other materials deemed necessary by the instructor.
- Incorporated into the curriculum will be the use of newspapers, magazines, the Internet, graphs, word processing, Study Island, Smart Technology, as well as other technology deemed necessary by the instructor.
- Students will be evaluated based upon quizzes, tests, examinations, homework, class participation, projects, as well as other assessment techniques.
- High Point Regional High School's curriculum and instruction are aligned to the state's Core Curriculum Content Standards and address the elimination of discrimination by narrowing the achievement gap, by providing equity in the educational programs and be providing opportunities for students to interact positively with others regardless of race, creed, color, national origin, ancestry, age, marital status, affectional or sexual orientation, gender, religion, disability, or socio-economical status.

ACADEMIC AND/OR FUNCTIONAL AREA:

Senior Math 12

ANNUAL MEASURABLE ACADEMIC AND/OR FUNCTIONAL GOAL: (Academic goals should be related to the Core Curriculum Content Standards through the general education curriculum unless otherwise required according to the student's educational needs. Preschool academic goals should be related to the Preschool Teaching & Learning Expectations: Standards of Quality.)

1. Standard 4.1 A: (Number and Numerical Operations) All students will develop number sense and will perform standard numerical operations and estimations on all types of numbers in a variety of ways. **90 01 00 Goal**

2. Standard 4.3 B: All students will represent and analyze relationships among variable quantities and solve problems involving patterns, functions, and algebraic concepts and processes. **90 10 00 GOAL**

3. Standard 4.5: All students will regularly and routinely use calculators, computers, manipulatives, and other mathematical tools to enhance mathematical thinking, understanding, and power. **90 92 00 GOAL**

4. Standard 4.5 D (Mathematical Processes, Reasoning): All students will use mathematical processes of problem solving, communication, connections, reasoning, representations, and technology to solve problems and communicate mathematical ideas. **90 20 00 GOAL**

BENCHMARKS OR SHORT TERM OBJECTIVES: Related to meeting the student's needs that result from the student's disability to enable the student to be involved in and progress in the general education curriculum and meeting the student's other educational needs [N.J.A.C. 6A:14-3.7(e)3].	**CRITERIA**	**EVALUATION PROCEDURES: State how the student's progress toward the annual goal will be measured [N.J.A.C. 6A:14-3.7(e)15].**	**PROGRESS**			
			1	**2**	**3**	**4**
1a) 90 01 35 OBJ: Understand and use ratios, proportions, and percents (including percents greater than 100 and less than 1) in a variety of situations.	90 % Accuracy	Assessments Observations Projects				
1b) 90 01 39 OBJ: Extend understanding of the number system by constructing meanings for the following: rational numbers, percents, exponents, roots, absolute values, numbers represented in scientific notation.	80 % Accuracy	Assessments Observations Projects				
1c) 90 01 42 OBJ: Compare and order numbers of all named types.	90 % Accuracy	Assessments Observations Projects				
1d) 90 01 43 OBJ: Use whole numbers, fractions, decimals, and percents to represent equivalent forms of the same	90 % Accuracy	Assessments Observations Projects				

number.						
1e) 90 01 47 OBJ: Compare and order rational and irrational numbers.	80 % Accuracy	Assessments Observations Projects				
2a) 90 10 05 OBJ: Graph points satisfying a function from T-charts, from verbal rules and from simple equations.	90 % Accuracy	Assessments Observations Projects				
2b) 90 10 07 OBJ: Graph functions, and understand and describe their general behavior.	80 % Accuracy	Assessments Observations Projects				
2c) 90 10 10 OBJ: Understand relations and functions and select, convert flexibility among, and use various representations for them, including equations or inequalities, tables and graphs.	70 % Accuracy	Assessments Observations Projects				
3a) 90 92 01 OBJ: Use a variety of tools to measure objects or events in real life situations.	90 % Accuracy	Assessments Observations Projects				
3b) 90 92 02 OBJ: Use calculators, manipulatives, computers, and other tools to solve math problems in real life situations.	90 % Accuracy	Assessments Observations Projects				
3c) 90 92 03 OBJ: Use a calculator to perform a variety of functions.	90 % Accuracy	Assessments Observations Projects				
4a) 90 20 40 OBJ: Rely on reasoning, rather than answer keys, teachers, or peers, to check the correctness of their solutions.	80 % Accuracy	Assessments Observations Projects				
4b) 90 20 44 OBJ: Use reasoning to support their mathematical conclusions and problem solutions.	80 % Accuracy	Assessments Observations Projects				
COMMENT:						
Progress Key: I – Introduced R – Re-Introduced LP – Limited Progress P – Progressing M - Mastered N – Not Introduced						

Senior Math

Course Proficiencies (Including New Jersey Core Curriculum Content Standards)

Unit 1: Number Sense and Patterns

- Goals: To understand and classify numbers. To recognize, create and extend numerical patterns and sequences.
- Objectives:
    1. Classify rational and irrational numbers (4.1 A)
    2. Classify prime and composite numbers. (4.1 A)
    3. Find the prime factorization of a number. (4.1 A)
    4. Identify the least common multiple of a set of numbers. (4.1 A)
    5. Identify the greatest common factor of a set of numbers. (4.1 A)
    6. Use the LCM and GCF to solve word problems. (4.1 A)
    7. Identify and describe math properties. (4.3 D)
    8. Calculate the nth term in arithmetic/geometric sequences (4.3 A)

Unit 2: Number Sense and Numerical Operations

- Goals: To understand and compute fractions and decimals.
- Objectives:
    1. Identify equivalent fractions. (4.1 A,B)
    2. Change mixed numbers to improper fractions and vice versa. (4.1 A,B)
    3. Add, subtract, multiply, and divide fractions and mixed numbers. (4.1 B)
    4. Apply the rules of the order of operations to evaluate mixed numbers and fractions. (4.1 B)
    5. Add, subtract, multiply, and divide decimals. (4.1 B)
    6. Convert fractions to decimals and decimals to fractions. (4.1 A)
    7. Organize and order mixed numbers including fractions, decimals, and integers. (4.1 B)
    8. Analyze word problems involving fractions and decimals. (4.1 B)
    9. Read, understand and create stem and leaf plots. (4.4 A) (4.5 E)

Unit 3: Percentages

- Goals: To understand and apply this understanding to percentages.
- Objectives:
    1. Demonstrate an understanding of percents. (4.1 A, B)
    2. Convert percents to decimals and fractions. (4.1 A,B)
    3. Find what percent one number is of another number. (4.1 A,B)
    4. Calculate percents greater than 100. (4.1 A,B)
    5. Calculate the price increase and decrease of items. (4.1 A,B)
    6. Calculate sales tax, interest, and deprecation. (4.1 A,B)
    7. Write numbers in scientific notation and standard form. (4.1 A,B)
    8. Analyze and solve word problems involving percents. (4.1 A,B) (4.5 A,D,E)

9. Construct, read, and understand circle graphs. (4.5 E)

Unit 4: Ratios, Proportions, Probability, and Data Analysis.

- Goals: To understand ratios, proportions, probability, and data analysis, and to apply this understanding.
- Objectives:
    1. Express ratios in simplest form. (4.1 A,B,C)
    2. Compare two or more ratios. (4.1 A,B,C)
    3. Solve proportions. (4.1 A,B,C)
    4. Find the probability of both independent and dependent events.
    5. Apply the counting principle, permutations, and combinations to find outcomes. (4.4 B,C)
    6. Compare the odds for different outcomes (4.4 B,C)
    7. Compute the mean, median, mode, range for data. (4.4 A) (4.5 F)
    8. Use statistics to make predictions. (4.4 A) (4.5 C,D)
    9. Construct and analyze scatter plots. (4.4 A) (4.5 E)

Unit 5: Concepts of Algebra

- Goals: To understand and apply concepts of Algebra.
- Objectives:
    1. Find squares, roots, and cubed roots of numbers. (4.1 B)
    2. Develop methods for solving problems involving negative exponents. (4.1 B)
    3. Apply the properties of exponents to simplify expressions containing integer exponents. (4.1 B)
    4. Simplify expressions contatining square roots and radicals. (4.1 B) (4.3 D)
    5. Identify different polynomials and their degree. (4.3 D)
    6. Simplify algebraic expressions containing multiplication and addition of polynomials. (4.3 D)
    7. Evaluate expressions with one variable. (4.1 B)
    8. Evaluate expressions with more than one variable. (4.1 B)
    9. Add, subtract, multiply, and divide polynomials. (4.3 D)
    10. Factor a monomial out of a polynomial. (4.3 D)
    11. Evaluate algebraic fractions through addition, subtraction, multiplication, and division. (4.3 D)

Unit 6: Linear Equations and Systems of Equations

- Goals: To understand linear equations, inequalities, systems of equations, and graphing.
- Objectives:
    1. Solve linear equations with one variable. (4.3 B,D)
    2. Solve linear inequalities. (4.3 C)
    3. Use systems of equations to solve equations with two variables. (4.3 B)
    4. Graph linear equations on a coordinate grid. (4.3 B)
    5. Graph absolute value functions on a coordinate grid. (4.3 B)

6. Graph two equations to determine their point of intersection. (4.3 B)
7. Solve quadratic equations.

- Note: Many of the goals and objectives are part of the Mathematical Processes standard of the NJCCCS which included:
    A. Problem Solving
    B. Communication
    C. Connections
    D. Reasoning
    E. Representations
    F. Technology