Groton Public Schools
Curriculum Map

INTRODUCTION

Course Title: Mathematics 9-10
Curriculum Area and Grade: Special Education (grades 9&10)

Course Purpose:
Specialized Mathematics 9-10 is designed to meet the needs of 9th and 10th grade special education students with significant cognitive impairments who are unable to perform within the regular math curriculum without appropriate supports. The purpose of this Math class is as an intensive math support system to continue the overall growth of the students' core math skills while exposing the students to the same curricular framework of their regular education peers. This class is also designed to provide overall growth of the students' core mathematics skills by helping them to master their IEP goals and objectives in that area.

Major Learning Goals and Understandings:
Student Learning Expectation(s): FHS Student Learning Expectation(s): SE1 Apply effective analysis, synthesis, and evaluative processes that enable productive problem solving. SE2 Communicate information clearly and effectively using a variety of tools/media in varied contexts and for a variety of purposes. SE3 Work independently and collaboratively to solve problems and accomplish goals. SE4 Use real-world digital and other research tools to access, evaluate and effectively apply information appropriate for authentic tasks. SE5 Demonstrate innovation, flexibility and adaptability in thinking patterns, work habits, and working/learning conditions. SE6 Value and demonstrate personal responsibility, character, cultural understanding, and ethical behavior.

Course Specific Learning Expectations:

- Operations with whole numbers and fractions. Topics will include addition, subtraction, multiplication, division, place value and estimating.
- Solutions of equations. Topics include solving algebraic equations.
- Problem solving. Topics include solving algebraic expressions.
- Coordinate geometry. Topics include plane geometry, the coordinate plane, straight lines and reading/interpreting graphs.
- Write and graph linear functions and use linear functions to represent real world situations.
- Interpret data by calculating measures of central tendency and creating visual representations using various forms of graphs.

Note: Units below are designed to be implemented over the two year span that students are enrolled in the course (grades 9 & 10 (Math)).

Units/Theme/Concept and # of Weeks Quarter = 9 weeks, Semester=18 weeks, Trimester= 12 weeks, Year=36 weeks --- usually spread over 40 weeks	
1. Unit 1/Year 1- Building Number Sense (18 weeks)	**2. Unit 2/Year 1- Solving Equations (18 weeks)**
3. Unit 1/Year 2- Linear Functions (18 weeks)	**4. Unit 2/Year 2- Statistics (18 weeks)**

Mappers/Authors: Marc Peluso
Date Approved:

Unit 1 Year 1- Building Number Sense			
Grade: 9/10	**Subject:** Mathematics	**Course:** Mathematics 9-10	**Length of Unit:** 18 Weeks

Common Core State Standards

CCSS.MATH.CONTENT.5.NBT.A.1

Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.

CCSS.MATH.CONTENT.5.NBT.A.4

Use place value understanding to round decimals to any place.

CCSS.MATH.CONTENT.5.NF.A.1

Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

CCSS.MATH.CONTENT.6.NS.A.1

Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

CCSS.MATH.CONTENT.6.NS.C.6

Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

CCSS.MATH.CONTENT.7.NS.A.1

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

Part 2 – Standards		
Key (GLE) Content Knowledge and Concepts/Skills		**Bloom's Taxonomy Levels** Creating, Evaluating, Analyzing, Applying, Understanding and Remembering
The students will know: 1. Integers 2. Rational Numbers 3. Decimals 4. Fractions 5. Percents 6. Place Value 7. Order of Operations 8. Distribution 9. Evaluation 10. Combining Like Terms	The students will be able to: 1. Add, subtract, multiply, and divide integers 2. Add, subtract, multiply and divide rational numbers 3. Apply integers and rational numbers in real world settings 4. Round Decimals to differing place values 5. Convert between decimals, percents and fractions 6. Use Order of Operations to evaluate and/or simplify expressions 7. Use the distributive property to simplify an expression 8. Follow the rules of "Order of Operations" to solve/simplify expressions.	During this unit, all levels will be used for multiple learning experiences.

Big Idea and Essential Questions

- **Big Ideas:**
    1. There is more than one way to represent a number
    2. Number sense develops through continued exposure to varied mathematical tasks.
    3. Math operations create relationships between numbers

- **Essential Questions**
    1. Why do I need mathematical operations?
    2. What kinds of experiences help develop number sense?
    3. How do I know which mathematical operation (+, -, x, ÷, exponents, etc.) to use?
    4. How do I know which computational method (mental math/estimation/calculator) to use?

Part 3 – Common Unit Assessments

UNIT 1 Assessment
Monthly CFA's

Part 4 – Common/Assured Learning Experiences

Important components of the course should include the use of technology, hands-on/tactile projects, and group/collaborative learning as a part of daily instruction and assessment.

Unit 2 Year 1- Solving Equations			
Grade: 9/10	**Subject:** Mathematics	**Course:** Mathematics 9-10	**Length of Unit:** 18 weeks

Common Core State Standards

CCSS.MATH.CONTENT.HSA.REI.A.1: Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method.

CCSS.MATH.CONTENT.HSA.SSE.A.1: Interpret expressions that represent a quantity in terms of its context.

CCSS.MATH.CONTENT.8.EE.C.7.B: Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.

CCSS.MATH.CONTENT.HSA.CED.A.1: Create equations and inequalities in one variable and use them to solve problems.

Part 2 – Standards		
Key (GLE) Content Knowledge and Concepts/Skills		**Bloom's Taxonomy Levels** Creating, Evaluating, Analyzing, Applying, Understanding and Remembering
The students will know: 1. Solving equations 2. Real-world use of equations 3. Strategies for solving single and multi-step equations	The students will be able to: 1. Solve one and two step equations with one variable. 2. Model real-world situations using equations.	During this unit, all levels will be used for multiple learning experiences.

Big Idea and Essential Questions

- **Big Ideas**
    1. The solution to an equation is the value that satisfies the equation (makes it true).
    2. Inverse operations are used to solve for a variable.

- **Essential Questions**
    1. What are the characteristics of an equation?
    2. To what extent can equations be used to model all relationships?
    3. How can we use linear equations to solve real world problems?

Part 3 – Common Unit Assessments

UNIT 2 Assessment
Monthly CFA's

Part 4 – Common/Assured Learning Experiences

Important components of the course should include the use of technology, hands-on/tactile projects, and group/collaborative learning as a part of daily instruction and assessment.

Unit 1/Year 2- Linear Functions			
Grade: 9/10	**Subject:** Mathematics	**Course:** Mathematics 9-10	**Length of Unit:** 18 weeks

Common Core State Standards

CCSS.MATH.CONTENT.8.F.A.3: Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

CCSS.MATH.CONTENT.HSF.IF.C.7.A: Graph linear functions and show intercepts.

CCSS.MATH.CONTENT.HSF.IF.B.6: Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

CCSS.MATH.CONTENT.HSA.CED.A.2: Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales.

Part 2 – Standards		
Key (GLE) Content Knowledge and Concepts/Skills		**Bloom's Taxonomy Levels** Creating, Evaluating, Analyzing, Applying, Understanding and Remembering
The students will know: 1. Slope 2. Line 3. Slope-Intercept form 4. Real-world data 5. Scatter plot 6. Line of best fit	The students will be able to: 1. Find the slope of a line 2. Write and graph equations in slope-intercept form. 3. Model real-world data with an equation in slope-intercept form. 4. Write an equation of a line when given two characteristics of it 5. Write an equation of a line given two points on the line. 6. Interpret points on a scatter plot.	During this unit, all levels will be used for multiple learning experiences.

Big Idea and Essential Questions

- **Big Ideas**

  1. Patterns and relationships can be represented numerically, graphically, symbolically, and verbally.
  2. Patterns provide insights into potential relationships.
  3. Real world situations can be represented symbolically and graphically.

- **Essential Questions**

    1. What is a pattern?
    2. How do I describe and represent a pattern?
    3. How do I show a patterns relationship?
    4. How can patterns be used to make predictions?

Part 3 – Common Unit Assessments

UNIT 3 Assessment
Monthly CFA's

Part 4 – Common/Assured Learning Experiences

Important components of the course should include the use of technology, hands-on/tactile projects, and group/collaborative learning as a part of daily instruction and assessment.

Unit 2/Year 2- Statistics			
Grade: 9/10	**Subject:** Mathematics	**Course:** Mathematics 9-10	**Length of Unit:** 18 weeks

Common Core State Standards

CCSS.MATH.CONTENT.HSS.ID.A.2: Use statistics appropriate to the shape of the data distribution to compare center (mean, median) and spread (interquartile range) of two or more different data sets.

CCSS.MATH.CONTENT.HSS.ID.B.6: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related.

CCSS.MATH.CONTENT.HSS.ID.B.6.C: Fit a linear function for a scatter plot that suggests a linear association.

CCSS.MATH.CONTENT.HSS.ID.C.7: Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data.

Part 2 – Standards		
Key (GLE) Content Knowledge and Concepts/Skills		**Bloom's Taxonomy Levels** Creating, Evaluating, Analyzing, Applying, Understanding and Remembering
The students will know: 1. Measures of central tendency	The students will be able to:	

2. Graphical representations of data 3. Calculating probability 4. Problems involving probabilities of events	1. Determine and use measures of spread and central tendency to describe and compare sets of data. 2. Determine outcomes and solve problems involving the probabilities of events. 3. Explore the concepts of conditional probability in real world contexts. 4. Collect real data and create meaningful graphical representations of the data through histograms and box-and-whisker plots.	During this unit, all levels will be used for multiple learning experiences.

Big Idea and Essential Questions

- **Big Ideas**
  1. The way that data is collected, organized and displayed influences interpretation
  2. Probability of an event's occurrence can be predicted with varying degrees of confidence

- **Essential Questions**

  1. Why is data collected and analyzed?
  2. How do people use data to influence others?
  3. How can predictions be made based on data?

Part 3 – Common Unit Assessments

UNIT 4 Assessment
Monthly CFA's

Part 4 – Common/Assured Learning Experiences

Important components of the course should include the use of technology, hands-on/tactile projects, and group/collaborative learning as a part of daily instruction and assessment.