FREEHOLD REGIONAL HIGH SCHOOL DISTRICT
OFFICE OF CURRICULUM AND INSTRUCTION
SPECIAL EDUCATION DEPARTMENT

MATH 1-4 LD

Grade Level: 9-12 plus

Credits: 5

BOARD OF EDUCATION ADOPTION DATE:
AUGUST 30, 2010

SUPPORTING RESOURCES AVAILABLE IN DISTRICT RESOURCE SHARING
APPENDIX A: ACCOMMODATIONS AND MODIFICATIONS
APPENDIX B: ASSESSMENT EVIDENCE
APPENDIX C: INTERDISCIPLINARY CONNECTIONS
FREEHOLD REGIONAL HIGH SCHOOL DISTRICT

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**Course Philosophy**

This course is designed with the belief that all students must develop mathematical literacy in order to be successful in their careers and as consumers in the 21st century. This curriculum is designed to assure that all students are mathematically challenged to their appropriate ability, while developing critical thinking and problem solving skills.

**Course Description**

The LLD Math Curriculum addresses the practical math skills that are essential for the students to be successful in the community. The flexibility of this curriculum provides the teacher the ability to adapt the curriculum to the level of a particular student or class by emphasizing mastery of basic skills.

This curriculum will provide students with an opportunity to acquire independent living skills at a pace appropriate to the students’ abilities and needs. The units can be taught separately or in conjunction with the other units. The students will develop functional skills that will enable them to meet the challenges of daily living with confidence.
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<thead>
<tr>
<th>Relevant Standards</th>
<th>Enduring Understandings</th>
<th>Essential Questions</th>
<th>Assessments</th>
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<tbody>
<tr>
<td>4.1 A 1-2, 4.1 B 1-2, 4.1 C 1</td>
<td>Basic math computational skills are utilized in all areas of everyday life in order to become functioning members of society.</td>
<td>Besides school, where else could you use comparing numbers, percent, ordering numbers, fraction, and place value? Why is place value important in real-life situations? How can we decide when to use an exact answer and when to use an estimate? How can numbers be represented? What strategies aid in mastering facts? How do operations affect numbers?</td>
<td>Pretest - Journals - Quizzes - Written Assignments - Observations - Participatory Rubrics - Performance - Interviews - Exit Tickets - Do Nows - Communicators - Algebra Tiles/Manipulatives - Math Games (i.e. “Bingo”, “Jeopardy”, board games) - Flash Cards</td>
</tr>
<tr>
<td>4.2 A 1, 3-5, 4.2 B 1, 3-4, 4.2 D 2, 4.2 E 1-2</td>
<td>Spatial sense and geometric relationships are a means to solve problems and make sense of a variety of phenomena and are important to real life application.</td>
<td>How are perimeter, area, surface area, and volume related? How do geometric relationships help to solve problems and/or make sense of phenomena? What are the relationships between parallel lines, perpendicular lines? Where would you see tessellations in the real world? Why is it necessary to use the appropriate tools (protractor, compass, rulers, and tape measure) to measure various geometric shapes?</td>
<td>Pretest - Journals - Quizzes - Written Assignments - Observations - Participatory Rubrics - Performance - Interviews - Exit Tickets - Do Nows - Communicators - Algebra Tiles/Manipulatives - Math Games (i.e. “Bingo”, “Jeopardy”, board games) - Flash Cards - Linking Cubes - Tanagrams - Geoboards - Pattern Blocks</td>
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<tr>
<td>4.3 A 1, 4.3 B 1-4, 4.3 C 1, 4.3 D 1-2</td>
<td>Patterns, functions, and relationships can be represented graphically.</td>
<td>How can change be best represented mathematically? How can patterns, relations, and functions be used as tools to best describe and help explain real-life</td>
<td>Pretest - Journals - Quizzes - Written Assignments - Observations</td>
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<td>4.4 A 1-2 4.4 B 3-5 4.4 C 1-3 4.4 D 1</td>
<td>numerically, symbolically, or verbally in real world situations.</td>
<td>situations? How are patterns of change related to the behavior of functions? How can we use mathematical models to describe physical relationships? How can we use physical models to clarify mathematical relationships? What makes an algebraic algorithm both effective and efficient?</td>
<td>-Oral Questions/Discussion -Anticipatory Set Questions</td>
</tr>
<tr>
<td>4.5 A 1-6 4.5 B 1-4 4.5 C 1-4, 6 4.5 D 1-6 4.5 E 1-3 4.5 F 1-2, 4</td>
<td>With the development of mathematical reasoning, students recognize that mathematics makes sense and can be understood and tools should be used not to replace mental math and paper and pencil</td>
<td>Data analysis quantifies the likelihood that something would happen and enables us to make predictions and informed decision. How can the collection, organization, interpretation, and display of data be used to answer questions? How can attributes be used to classify data/objects? How can probability be used to make predictions and/or conclusions? What is the best way to solve a mathematical problem? What counting strategy works best here? How can visual tools such as networks (vertex-edge graphs) be used to answer questions? How can algorithmic thinking be used to solve problems?</td>
<td>-Pretest -Student Survey -Oral Questions/Discussion -Anticipatory Set Questions</td>
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| computation, but to enhance understanding of mathematics and the power to use mathematics. | the sciences, social sciences, the arts, and to the everyday world? | How can students use their ability to reason to conquer a wide array of mathematical problems? | - Algebra Tiles/Manipulatives  
- Math Games (i.e. “Bingo”, “Jeopardy”, board games)  
- Flash Cards  
- Science, Social Science, and Art texts  
- Coloring Projects  
- Computer Programs  
- Calculators |
<p>| | What type of alternate perspectives can be used to present the problem and the solution? | When would you use a chart or graph to display pertinent information? | |
| | When can we learn from the past to better the future? | How can the use of technology enhance the learning environment? | |</p>
<table>
<thead>
<tr>
<th>Unit Title</th>
<th>Unit Understandings</th>
<th>Recommended Duration</th>
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</table>
| Unit #1: Number Sense              | Numerical reasoning uses real life experiences, physical materials and technology to construct meanings for numbers.  
1. Students will understand the various uses of numbers.  
2. Students will understand how to compare and order numbers. | 2-3 weeks            |
| Unit #2: Numerical Operations      | Computational fluency includes understanding the meaning and the appropriate use of numerical operations.  
1. Students will understand how to create and solve matrices.  
2. Students will understand how to check the reasonableness of results of computations.  
3. Students will understand techniques for solving equations systematically. | 2-3 weeks            |
| Unit #3: Estimation                | Context is critical when using estimation.  
1. Students will understand how to recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.  
2. Students will understand how to use estimation to determine whether the result of a computation is reasonable. | 2 weeks              |
| Unit #4: Geometric Properties and Transforming Shapes | Spatial sense and geometric relationships are a means to solve problems and make sense of a variety of phenomena.  
1. Students will understand geometric symbols, shapes and figures  
2. Students will understand how tessellations are generated. | 2-3 weeks            |
| Unit #5: Coordinate Geometry       | Coordinate geometry can be used to represent and verify geometric/algebraic relationships. The functions and relationships concepts are fundamental ideas in mathematics.  
1. Students will understand how to find the distance between two points.  
2. Students will understand how to fit a line to data and make predictions. | 2-4 weeks            |
| Unit #6: Measurement               | Measurement is a tool to quantify a variety of phenomena. Measurement can be used to solve everyday problems through the use of different measuring tools.  
1. Students will understand how to select and use the standard units of measure and measurement tools.  
2. Students will understand how to measure and calculate the area, perimeter, circumference of geometric figures. | 3-4 weeks            |
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| Unit #7: Patterns, Functions and Relationships in Algebra | Patterns, functions and relationships can be represented graphically, numerically, symbolically, or verbally. Real world situations can be modeled by graphs and equations.  
1. Students will understand how to interpret patterns in real life situations.  
2. Students will understand how to evaluate expressions using order of operations.  
3. Students will use concrete and pictorial models to explore the basic concept of a function.                                                                 | 2-4 weeks            |
| Unit #8: Data Analysis                          | Reading, Understanding, interpreting, and communicating data are critical in modeling a variety of real-world situations, drawing appropriate inferences, making informed decisions, and justifying those decisions.  
1. Students will understand how to evaluate data for accuracy and reasonableness of conclusions drawn.  
2. Students will understand how to use sampling techniques to generate data and draw conclusions about large groups.                                                                 | 2-4 weeks            |
| Unit #9: Probability                            | Probability quantifies the likelihood that something will happen and enables us to make predictions and informed decisions.  
1. Students will understand how to calculate the probability of two events that occur simultaneously.  
2. Students will understand how to use chance devices to explore concepts of probability.                                                                                                           | 2-3 weeks            |
| Unit #10: Discrete Mathematics                  | Consists of tools and strategies for representing, organizing, and interpreting non-continuous data.  
1. Students will understand how to investigate ways to represent and classify data according to attributes.  
2. Students will understand how to apply the multiplication rule of counting in complex situation.  
3. Students will understand how to use networks and tree diagrams to represent everyday situations.                                                                                                               | 2-4 weeks            |
Enduring Understanding: Basic math computational skills are utilized in all areas of everyday life in order to become functioning members of society.

Essential Questions: Besides school, where else could you use comparing numbers, percent, ordering numbers, fraction, and place value?
- Why is place value important in real-life situations?
- How can numbers be represented?
- What strategies aid in mastering facts?

Unit Goals: Students will understand the various uses of numbers.
Students will understand how to compare and order numbers.

Duration of Unit: 2-3 weeks
NJCCCS: 4.1 A-B, 4.3 D, 4.5 A-F

<table>
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<th>Instructional Resources and Materials</th>
<th>Teaching Strategies</th>
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<tr>
<td>Number Sense</td>
<td>~What is the relationship between whole numbers, percents, fractions, and decimals? ~How do you use real-life experiences, physical materials, and technology to construct meanings for numbers ~How do you demonstrate an understanding of whole number place value concepts? ~How do you identify whether any whole number is odd or even? ~How do you explore the extension of the place value system to decimals through hundredths? ~How do you understand the various uses of numbers? ~How do you compare and order numbers? ~Why is it important to know how to work with money?</td>
<td>~Use real-life experiences, physical materials, and technology to construct meanings for numbers ~Identify whole numbers through hundred thousands ~Identify commonly used fractions as part of a whole, as a subset of a set, and as a location on a number line ~Demonstrate an understanding of whole number place value concepts ~Identify whether any whole number is odd or even ~Explore the extension of the place value system to decimals through hundredths ~Understand the various uses of numbers ~Compare and order numbers</td>
<td>~Select and use the appropriate method for solving problems (mental math, paper and pencil or calculator). ~Select and use the appropriate method for solving problems (mental math, paper and pencil or calculator).</td>
<td>~Chapter tests and quizzes ~Cooperative and independent learning experiences ~Class work and homework ~Closure Questions/Exit Tickets ~Performance task ~Math Games ~Multimedia presentations ~Self-assessment ~Portfolio assessment ~Oral Questions ~Do Nows ~Projects ~Midterms/Finals</td>
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Suggestions on how to differentiate in this unit:
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.
Enduring Understanding: Basic math computational skills are utilized in all areas of everyday life in order to become functioning members of society.

Essential Questions: How can numbers be represented? What strategies aid in mastering facts? How do operations affect numbers?

Unit Goals: Students will understand how to create and solve matrices.
Students will understand how to check the reasonableness of results of computations.
Students will understand techniques for solving equations systematically.

Duration of Unit: 2-3 weeks
NJCCCS: 4.1 B, 4.3 C-D, 4.5 A-F
**Enduring Understanding:** Basic math computational skills are utilized in all areas of everyday life in order to become functioning members of society.

**Essential Questions:** Besides school, where else could you use comparing numbers, percent, ordering numbers, fraction, and place value?
- Why is place value important in real-life situations?
- How can we decide when to use an exact answer and when to use an estimate?
- How can numbers be represented?

**Unit Goals:** Students will understand how to recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.

- Students will understand how to use estimation to determine whether the result of a computation is reasonable.

**Duration of Unit:** 2 weeks

**NJCCCS:** 4.1 C, 4.5 A-D

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<td>~How do you judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set?</td>
<td>~Judge without counting whether a set of objects has less than, more than, or the same number of objects as a reference set.</td>
<td>~Lecture ~Notes ~Transparencies ~SmartBoard presentations ~Manipulatives ~Communicators ~Internet and interactive displays and activities ~Use current technology ~Demonstrations ~Hands on activities ~Educational excursions ~Graphic organizer ~Textbook Ancillaries ~Calculators ~Math magazines (Scholastic Math Magazines)</td>
<td>~Estimating Games ~Use direct instruction to introduce new topics ~Use guided and independent practice activities ~Anticipatory Sets to measure background knowledge and engage students ~Paired – Shared Activities</td>
<td>~Chapter tests and quizzes ~Cooperative and independent learning experiences ~Class work and homework ~Closure Questions/Exit Tickets ~Performance task ~Math Games ~Multimedia presentations ~Self-assessment ~Portfolio assessment ~Oral Questions ~Do Nows ~Projects ~Midterms/Finals</td>
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<td>~How do you construct and use a variety of estimation strategies?</td>
<td>~Construct and use a variety of estimation strategies (e.g., rounding and mental math) for estimating both quantities and the result of computations.</td>
<td>~Recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer.</td>
<td>~Use estimation to determine whether the result of a computation (either by calculator or by hand) is reasonable.</td>
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<tr>
<td>~How do you recognize when an estimate is appropriate, and understand the usefulness of an estimate as distinct from an exact answer?</td>
<td>~Brainstorm times when you would want to estimate</td>
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**Suggestions on how to differentiate in this unit:**
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.
Enduring Understanding: Spatial sense and geometric relationships are a means to solve problems and make sense of a variety of phenomena and are important to real life application.

Essential Questions: How do geometric relationships help to solve problems and/or make sense of phenomena?
What are the relationships between parallel lines, perpendicular lines?
Where would you see tessellations in the real world?
Why is it necessary to use the appropriate tools (protractor, compass, rulers, and tape measure) to measure various geometric shapes?

Unit Goals: Students will understand geometric symbols, shapes and figures
Students will understand how tessellations are generated.

Duration of Unit: 2-3 weeks
NJCCCS: 4.2 A-B, 4.5 A-F

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<td>~How do you identify similar figures?</td>
<td>~Trace a mirror image vertically or horizontally</td>
<td>~Lecture</td>
<td>~Compare/contrast Scalene Triangle and an Equilateral Triangle using spaghetti or licorice as visuals.</td>
<td>~Chapter tests and quizzes</td>
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<tr>
<td>~How do you identify and/or create a tessellation?</td>
<td>~Identify similarities and differences of angles/lengths of sides of triangles and quadrilaterals.</td>
<td>~Notes</td>
<td>~Use guided and independent practice activities</td>
<td>~Cooperative and independent learning experiences</td>
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<td>~Identify geometric symbols, shapes, and figures</td>
<td>~SmartBoard presentations</td>
<td>~Anticipatory Sets to measure background knowledge and engage students</td>
<td>~Class work and homework</td>
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<td>~Identify what two dimensional shapes exists when given a three dimensional figure</td>
<td>~Manipulatives</td>
<td>~Use geometric’s sketchpad as a technology enhancement to the material</td>
<td>~Closure Questions/ Exit Tickets</td>
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<td>-Communicators</td>
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<td>~Performance task</td>
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<td>-Mirrors</td>
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<td>~Math Games</td>
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<td>-Tangrams</td>
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<td>-Pattern Blocks</td>
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<td>~Self-assessment</td>
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<td>~Internet and interactive displays and activities</td>
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<td>~Portfolio assessment</td>
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<td>~Use current technology</td>
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<td>~Demonstrations</td>
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<td>~Do Nows</td>
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<td>~Hands on activities</td>
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<td>~Projects</td>
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<td>~Educational excursions</td>
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<td>~Midterms/Finals</td>
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<td>~Graphic organizer</td>
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<td>~Textbook Ancillaries</td>
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<td>~Calculators</td>
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<td>~Math magazines (Scholastic Math Magazines)</td>
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Suggestions on how to differentiate in this unit:
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.
**Enduring Understanding:** Spatial sense and geometric relationships are a means to solve problems and make sense of a variety of phenomena and are important to real life application.

**Essential Questions:**
- How do geometric relationships help to solve problems and/or make sense of phenomena?
- What are the relationships between parallel lines, perpendicular lines?
- Why is it necessary to use the appropriate tools (protractor, compass, rulers, and tape measure) to measure various geometric shapes?

**Unit Goals:**
- Students will understand how to find the distance between two points.
- Students will understand how to fit a line to data and make predictions.

**Duration of Unit:** 2-4 weeks

**NJCCCS:** 4.2 C, 4.5 E-F

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<td>~How can you describe the spatial relationship among objects in space and their relative shapes and sizes?</td>
<td>~Write and solve proportions through visual groupings.</td>
<td>~Lecture, Notes, Transparencies, SmartBoard presentations, Manipulatives, Geoboards, Number Lines, Internet and interactive displays and activities, Use current technology, Demonstrations, Hands on activities, Educational excursions, Graphic organizer, Textbook Ancillaries, Calculators, Math magazines (Scholastic Math Magazines)</td>
<td>~Demonstrate how to reduce fractions using a chart to find common multiples of denominators and numerators. ~Solve proportions. ~Write and solve proportions through visual groupings. ~Write and solve proportions from word problems (use recipes to demonstrate</td>
<td>~Chapter tests and quizzes ~Cooperative and independent learning experiences ~Class work and homework ~Closure Questions/Exit Tickets ~Performance task ~Math Games ~Multimedia presentations ~Self-assessment ~Portfolio assessment ~Oral Questions ~Do Nows ~Projects ~Midterms/Finals</td>
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<td>~Explain how to decide whether an ordered pair is a solution of an equation?</td>
<td>~Explain how to draw and label a coordinate plane.</td>
<td>~Demonstrate how to use the slope formula and apply it to parallel and perpendicular lines.</td>
<td>~Use direct instruction to introduce new topics</td>
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<tr>
<td>~Are the following lines parallel or perpendicular?</td>
<td>~Demonstrate how to plot the points on one coordinate plane.</td>
<td>~Use guided and independent practice activities</td>
<td>~Anticipatory Sets to measure background knowledge and engage students.</td>
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<td>~How do you find the midpoint of two points?</td>
<td>~Demonstrate how to find the midpoint of two points.</td>
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**Suggestions on how to differentiate in this unit:**
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.
**Freehold Regional High School District**  
**Math I-IV LD**  
**Unit #6: Measurement**

**Enduring Understanding:** Spatial sense and geometric relationships are a means to solve problems and make sense of a variety of phenomena and are important to real life application.

**Essential Questions:**  
- How are perimeter, area, surface area, and volume related?  
- Why is it necessary to use the appropriate tools (protractor, compass, rulers, and tape measure) to measure various geometric shapes?

**Unit Goals:**  
- Students will understand how to select and use the standard units of measure and measurement tools.  
- Students will understand how to measure and calculate the area, perimeter, circumference of geometric figures.

**Duration of Unit:** 3-4 weeks  
**NJCCCS:** 4.2 D-E, 4.5 E-F

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| ~How do you measure the passing of time? ~How do you select and use the standard units of measure and measurement tools? ~What is the relationship between measurements within a measurement system, for example, how are centimeters and meters related? ~What is the relationship between area and perimeter? ~What do we mean by a standard? ~Why is it important to have a standard? | ~Write time in standard notation ~Calculate elapsed time ~Measure and calculate the area, perimeter, circumference of geometric figures ~Find the surface area and volume of geometric figures ~Solve problems using elapsed time ~Convert measurements within a system ~How to make conversions within a measurement system. ~The relationship between perimeter and area ~The relationship between surface area and volume | ~Lecture ~Notes ~Transparencies ~SmartBoard presentations ~Manipulatives -Communicators -Clocks -Bus/Train Schedules -Geoboards -Linking Cubes -Trundle Wheels ~Internet and interactive displays and activities ~Use current technology ~Demonstrations ~Hands on activities ~Educational excursions ~Graphic organizer ~Textbook Ancillaries ~Calculators ~Math magazines (Scholastic Math Magazines) | ~When given 2 adjacent sides of a rectangle, plug in the remaining information to find the perimeter. ~Use tools for measuring time: stop watch, clock, and calendar. ~Use appropriate standard measurement tools (rulers, clock, calendar, thermometer, balance, scale, measuring cup) ~Select and use appropriate standard units of measure (inch, meter, mile, square inch, cubic inch, cup, hours, minutes, grams, degrees Fahrenheit) ~Anticipatory Sets to measure background knowledge and engage students ~Use direct instruction to introduce new topics ~Use guided and independent practice activities | ~Chapter tests and quizzes ~Cooperative and independent learning experiences ~Class work and homework ~Closure Questions/Exit Tickets ~Performance task ~Math Games ~Multimedia presentations ~Self-assessment ~Portfolio assessment ~Oral Questions ~Do Nows ~Projects ~Midterms/Finals

**Suggestions on how to differentiate in this unit:**  
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods  
- A wide variety of assessments and strategies complement the individual learning experience.  
- Teachers will provide more individual reinforcement of necessary skills.
**Freehold Regional High School District**  
**Math I-IV LD**  
**Unit #7: Patterns, Functions, and Relationships in Algebra**

**Enduring Understanding:** Patterns, functions, and relationships can be represented graphically, numerically, symbolically, or verbally in real world situations.

**Essential Questions:**
- How can change be best represented mathematically?
- How can patterns, relations, and functions be used as tools to best describe and help explain real-life situations?
- How are patterns of change related to the behavior of functions?
- How can we use mathematical models to describe physical relationships?
- How can we use physical models to clarify mathematical relationships?
- What makes an algebraic algorithm both effective and efficient?

**Unit Goals:**
- Students will understand how to interpret patterns in real life situations.
- Students will understand how to evaluate expressions using order of operations.
- Students will use concrete and pictorial models to explore the basic concept of a function.

**Duration of Unit:** 2-4 weeks  
**NJCCCS:** 4.3 A-D, 4.5 A-F

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<tr>
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<th>Content, Themes, Concepts, and Skills</th>
<th>Instructional Resources and Materials</th>
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</table>
| ~How are expressions and equations related? | ~Expressions and equations are related using an equal sign. | ~Lecture  
~Notes  
~Transparencies  
~SmartBoard presentations  
~Manipulatives -Communicators  
-Algebra Tiles  
~Internet and interactive displays and activities  
~Use current technology  
~Demos  
~Hands on activities  
~Educational excursions  
~Graphic organizer  
~Textbook Ancillaries  
~Calculators  
~Math magazines (Scholastic Math Magazines) | ~Understand and evaluate algebraic expressions  
~Draw a pattern and try to figure out what has changed from one figure to the next  
~Student created patterns using a variety of manipulatives  
~Describe the pattern  
~Convert a visual pattern to a numerical pattern  
~Use a table to organize thinking  
~Student created graphs  
~Comparison Shopping Activities  
~Use guided and independent practice activities | ~Chapter tests and quizzes  
~Cooperative and independent learning experiences  
~Class work and homework  
~Closure Questions/Exit Tickets  
~Performance task  
~Math Games  
~Multimedia presentations  
~Self-assessment  
~Portfolio assessment  
~Oral Questions  
~Do Nows  
~Projects  
~Midterms/Finals |
| ~Where do patterns occur in real life situations? | ~Apply the standard order of operations  
~Recognize, describe, extend and create pattern to recognize and describe change over time  
~Interpret patterns in real life situations  
~Evaluate expressions using order of operations  
~Represent a function in a variety of ways  
~Reading graphs, understanding graphs  
~Use graphing calculators to create a graph | | |
| ~How can a function be represented? | | | |
| ~How do you recognize and describe change in quantities? | | | |

**Suggestions on how to differentiate in this unit:**
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.
**Freehold Regional High School District**  
**Math I-IV LD**  
**Unit #8: Data Analysis**

**Enduring Understanding:** Data analysis quantifies the likelihood that something would happen and enables us to make predictions and informed decision.

**Essential Questions:**
- How can the collection, organization, interpretation, and display of data be used to answer questions?
- How can attributes be used to classify data/objects?
- How can probability be used to make predictions and/or conclusions?
- What is the best way to solve this? What counting strategy works best here?
- How can visual tools such as networks (vertex-edge graphs) be used to answer questions? How can algorithmic thinking be used to solve problems?

**Unit Goals:** Students will understand how to evaluate data for accuracy and reasonableness of conclusions drawn.
Students will understand how to use sampling techniques to generate data and draw conclusions about large groups.

**Duration of Unit:** 2-4 weeks

**NJCCCS:** 4.4 A, 4.5 A-F

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<tr>
<td>~How can data be organized, displayed, and interpreted? ~How do you read, interpret, construct, and analyze displays of data? ~How do you use the concepts of equals, less than, and greater than to describe relations between numbers?</td>
<td>~Collect data from school, classroom, environment to create charts ~Put gathered data in order ~Analyze and interpret data. ~Count sequentially ~Generate data from chance devices, such as spinners and dice ~Represent data using pictures, tally charts, pictograph, bar graph, Venn diagram</td>
<td>~Lecture ~Notes ~Transparencies ~SmartBoard presentations ~Manipulatives ~Communicators ~Internet and interactive displays and activities ~Use current technology ~Demonstrations ~Hands on activities ~Educational excursions ~Graphic organizer ~Textbook Ancillaries ~Calculators ~Math magazines (Scholastic Math Magazines)</td>
<td>~Use M&amp;M, candy bars, licorice to teach total, fraction, decimal, percent ~Pie charts ~Arrange groups of objects in various orders ~Arrange coins in progressive order ~Conduct a survey ~Student generated graphs ~Cooperative groups to analyze data</td>
<td>~Chapter tests and quizzes ~Cooperative and independent learning experiences ~Class work and homework ~Closure Questions/Exit Tickets ~Performance task ~Math Games ~Multimedia presentations ~Self-assessment ~Portfolio assessment ~Oral Questions ~Do Nows ~Projects ~Midterms/Finals</td>
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**Suggestions on how to differentiate in this unit:**
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.
Enduring Understanding: Data analysis quantifies the likelihood that something would happen and enables us to make predictions and informed decision.

Essential Questions:
How can the collection, organization, interpretation, and display of data be used to answer questions?
How can attributes be used to classify data/objects? How can probability be used to make predictions and/or conclusions?
How can attributes be used to classify data/objects? What is the best way to solve this? What counting strategy works best here?
How can visual tools such as networks (vertex-edge graphs) be used to answer questions? How can algorithmic thinking be used to solve problems?

Unit Goals: Students will understand how to calculate the probability of two events that occur simultaneously.
Students will understand how to use chance devices to explore concepts of probability.

Duration of Unit: 2-3 weeks
NJCCCS: 4.4 B, 4.5 A-F

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<tr>
<td>~What events are predictable?</td>
<td>~Use chance devices to explore concepts of probability</td>
<td>~Lecture</td>
<td>~Use coin flipping or card playing to show experimental vs. theoretical</td>
<td>~Chapter tests and quizzes</td>
</tr>
<tr>
<td>~How do you record accurate information based on possible outcomes?</td>
<td>~Provide probability of specific outcomes</td>
<td>~Notes</td>
<td>~Cooperative and independent learning experiences</td>
<td>~Cooperative and independent learning experiences</td>
</tr>
<tr>
<td>~How do you distinguish between experimental and theoretical probability?</td>
<td>~Find probability of two events that are mutually exclusive</td>
<td>~Transparencies</td>
<td>~Class work and homework</td>
<td>~Class work and homework</td>
</tr>
<tr>
<td>~How can we use the counting principle in probability?</td>
<td>~Find the probability of two events that occur simultaneously</td>
<td>~SmartBoard presentations</td>
<td>~Closure Questions/Exit Tickets</td>
<td>~Closure Questions/Exit Tickets</td>
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<tr>
<td></td>
<td>~Calculate the probability of events</td>
<td>~Manipulatives</td>
<td>~Performance task</td>
<td>~Performance task</td>
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<td></td>
<td>~Internet and interactive displays and activities</td>
<td>~Communicators</td>
<td>~Math Games</td>
<td>~Math Games</td>
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<td></td>
<td>~Use current technology</td>
<td>~Flash Cards</td>
<td>~Multimedia presentations</td>
<td>~Multimedia presentations</td>
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<td>~Demonstrations</td>
<td>~Linking Cubes</td>
<td>~Self-assessment</td>
<td>~Self-assessment</td>
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<td>~Hands on activities</td>
<td>~Dice</td>
<td>~Portfolio assessment</td>
<td>~Portfolio assessment</td>
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<td>~Educational excursions</td>
<td>~Deck of Playing Cards</td>
<td>~Oral Questions</td>
<td>~Oral Questions</td>
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<td>~Graphic organizer</td>
<td>~Coins</td>
<td>~Do Now</td>
<td>~Do Now</td>
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<td></td>
<td>~Textbook Ancillaries</td>
<td>~Positive/Negative Chips</td>
<td>~Projects</td>
<td>~Projects</td>
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<td>~Calculators</td>
<td>~Spinners</td>
<td>~Midterms/Finals</td>
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~Scholastic Math Magazines

Suggestions on how to differentiate in this unit:
• Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods
• A wide variety of assessments and strategies complement the individual learning experience.
• Teachers will provide more individual reinforcement of necessary skills.
Freehold Regional High School District  
Math I-IV LD  
Unit #10: Discrete Mathematics

**Enduring Understanding:**  Data analysis quantifies the likelihood that something would happen and enables us to make predictions and informed decision.

**Essential Questions:**
- How can the collection, organization, interpretation, and display of data be used to answer questions?
- How can attributes be used to classify data/objects? How can probability be used to make predictions and/or conclusions?
- How can attributes be used to classify data/objects? What is the best way to solve this? What counting strategy works best here?
- How can visual tools such as networks (vertex-edge graphs) be used to answer questions? How can algorithmic thinking be used to solve problems?

**Unit Goals:**
- Students will understand how to investigate ways to represent and classify data according to attributes.
- Students will understand how to apply the multiplication rule of counting in complex situation.
- Students will understand how to use networks and tree diagrams to represent everyday situations.

**Duration of Unit:** 2-4 weeks  
**NJCCCS:** 4.4 C-D, 4.5 A-F

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</table>
| ~How do you sort and classify objects according to attributes? | ~Explore a variety of puzzles, games, and counting problems | ~Lecture  
~Notes  
~Transparencies  
~SmartBoard presentations  
~Manipulatives  
~Communicators  
~Linking Cubes  
~Hula Hoops  
~Attribute Blocks  
~Internet and interactive displays and activities  
~Use current technology  
~Demonstrations  
~Hands on activities  
~Educational excursions  
~Graphic organizer  
~Textbook Ancillaries  
~Calculators  
~Math magazines (Scholastic Math Magazines) | ~Matching games  
~Memory games  
~Sorting activities | ~Chapter tests and quizzes  
~Cooperative and independent learning experiences  
~Class work and homework  
~Closure Questions/Exit Tickets  
~Performance task  
~Math Games  
~Multimedia presentations  
~Self-assessment  
~Portfolio assessment  
~Oral Questions  
~Do Nows  
~Projects  
~Midterms/Finals |
| ~How do you generate all possibilities in simple counting situations? | ~Investigate ways to represent and classify data according to attributes, such as color or shape, and relationships | ~Discuss the purpose and usefulness of such classification | ~Use networks and tree diagrams to represent everyday situations | ~Students use two Hula Hoops to assist in sorting attribute blocks or other objects according to two characteristics.  
~Use Venn diagrams to organize the similarities and differences between the information in two stories | |
| ~How do you follow simple sets of directions? | ~Explore a variety of puzzles, games, and counting problems | | ~Students bring in names of cities and their zip codes where their relative and friends live, paste these at the appropriate locations on a map of the US, and look for patterns which might explain | |
| ~How do you explore concrete models of vertex-edge graphs to create paths from one vertex to another? | | | | |

**Suggestions on how to differentiate in this unit:**
- Students with individual learning styles can be assisted through adjustments in assessment standards, one-to-one teacher support, additional testing time, and use of visual and auditory teaching methods.
- A wide variety of assessments and strategies complement the individual learning experience.
- Teachers will provide more individual reinforcement of necessary skills.