

# Algebra II Math Curriculum



## Egg Harbor Township School District

State Board Adoption Date of Standards: 5/2016

## Unit Overview (Standards Coverage)

Unit	Standards	Unit Focus	Standards for Mathematical Practice	Open Educational Resources
<b>Unit 1</b> <b>Linear Functions</b> (4 weeks)	F.IF.9 F.BF.1a F.BF.3 F.LE.2 A.CED.2 A.CED.3 A.REI.6 S.ID.61 N.RN.2a	<ul style="list-style-type: none"> <li>Identify function families</li> <li>Describe transformations of parent functions</li> <li>Write functions representing various transformations</li> <li>Write equations of linear functions</li> <li>Apply rate of change as it relates to linear functions</li> <li>Find lines of fit and lines of best fit by hand and using technology</li> <li>Solve systems of equations in three variables algebraically</li> </ul>	MP.1 Make sense of problems and persevere in solving them.  MP.2 Reason abstractly and quantitatively.  MP.3 Construct viable arguments & critique the reasoning of others.  MP.4 Model with mathematics.  MP.5 Use appropriate tools strategically.  MP.6 Attend to precision.  MP.7 Look for and make use of structure.  MP.8 Look for and express regularity in repeated reasoning	<a href="#">N.RN.A.2 Rational or Irrational?</a>  <a href="#">A.REI.C.6 Pairs of Whole Numbers</a>  <a href="#">F.BF.B.3 Transforming the graph of a function</a>
<b>Unit 2</b> <b>Quadratic Functions</b> (7 weeks)	A.CED.2 A.APR.3 F.IF.1 F.IF.4 F.IF.7a F.IF.9 G.GPE.2a A.REI.4a A.REI.4b A.REI.7 A.CED.1 A.CED.3 F.IF.8 N.CN.1 N.CN.2	<ul style="list-style-type: none"> <li>Describe and write transformations of quadratic functions</li> <li>Graph quadratic functions using various methods including tables, intercepts, and technology</li> <li>Write equations of parabolas and quadratic equations including those that model data sets</li> <li>Solve quadratic equations for real and complex solutions</li> </ul>	MP.8 Look for and express regularity in repeated reasoning	<a href="#">A.REI.C.7 Linear and Quadratic System</a>  <a href="#">N.CN.C.7, A.REI.B.4b Completing the square</a>  <a href="#">N.CN.A.1 Complex number patterns</a>  <a href="#">N.CN.A.2 Powers of a complex number</a>  <a href="#">G.GPE.A.2 Defining Parabolas Geometrically</a>

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	<p>N.CN.7 N.CN.8</p>	<ul style="list-style-type: none"> <li>• Solve quadratic equations using various methods including graphing, factoring, quadratic formula, completing the square, and technology</li> <li>• Perform operations on complex numbers</li> <li>• Solve systems of non-linear equations</li> <li>• Graph quadratic inequalities and systems of quadratic inequalities in 2 variables and describe solutions sets</li> </ul>		
<p><b>Unit 3</b> <b>Polynomial Functions (5 weeks)</b></p>	<p>A.APR.1 A.APR.2 A.APR.3 A.APR.4 A.APR.5 A.CED.2 A.SSE.2 F.IF.4 F.IF.7c F.BF.3</p>	<ul style="list-style-type: none"> <li>• Graph and analyze graphs of polynomial functions and their transformations</li> <li>• Perform operations on polynomial expressions</li> <li>• Factor polynomial expressions using various methods</li> <li>• Solve polynomial equations using various methods including factoring and technology</li> <li>• Write polynomial functions of least degree given their solutions</li> </ul>		<p><a href="#">A.APR.B.2 The Missing Coefficient</a> <a href="#">A.SSE.A.2 A Cubic Identity</a> <a href="#">A.APR.B.3 Graphing from Factors III</a> <a href="#">F.IF.C.7c Graphs of Power Functions</a> <a href="#">A.APR.C.4 Trina’s Triangles</a></p>
<p><b>Unit 4</b> <b>Radical Functions and Rational Exponents (5 weeks)</b></p>	<p>A.REI.1 A.REI.2 N.RN.1 N.RN.2 F.BF.1b F.BF.3 F.BF.4a</p>	<ul style="list-style-type: none"> <li>• Solve radical equations including those with extraneous solutions</li> <li>• Use properties of rational exponents to simplify and evaluate expressions</li> <li>• Use properties of radicals and exponents to explore and understand the</li> </ul>		<p><a href="#">A.REI.A.2 Radical Equations</a> <a href="#">A.REI.A.2, A.CED.A.1 An Extraneous Solution</a> <a href="#">F.BF.B.4a Temperatures in degrees Fahrenheit and Celsius</a></p>

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		<p>relationship between the two</p> <ul style="list-style-type: none"> <li>• Perform operations on functions</li> <li>• Compose functions</li> <li>• Graph radical functions</li> <li>• Find inverse functions and determine if functions are inverses of one another</li> </ul>		
<p><b>Unit 5</b> <b>Exponential and Logarithmic Functions</b> (4 weeks)</p>	<p>A.SSE.1b A.SSE.2 A.SSE.3c F.IF.7e F.LE.3 F.LE.4 F.LE.5 F.IF.8b</p>	<ul style="list-style-type: none"> <li>• Find and analyze exponential growth and decay functions and their applications including compound interest</li> <li>• Model using exponential growth and decay functions including when given data</li> <li>• Use the natural base, e, in application problems including compound interest</li> <li>• Graph exponential and logarithmic functions</li> <li>• Apply properties of logarithms</li> <li>• Solve exponential and logarithmic equations</li> <li>• Use analytical, numerical, and graphing approaches to problem solving and modeling</li> </ul>		<p><a href="#">F.LE.A.2 Rumors</a></p> <p><a href="#">F.LE.B.5, F.LE.A.2 Exponential Parameters</a></p> <p><a href="#">A.SSE.B.4 Course of Antibiotics</a></p> <p><a href="#">N.RN.A.1 Evaluating Exponential Expressions</a></p> <p><a href="#">A.SSE.B.3c Forms of exponential expressions</a></p> <p><a href="#">F.IF.C.8b Carbon 14 dating in practice I</a></p> <p><a href="#">F.LE.A.4 Carbon 14 dating</a></p> <p><a href="#">F.IF.C.7e Logistic Growth Model</a></p>
<p><b>Unit 6</b> <b>Rational Functions</b> (4 weeks)</p>	<p>A.APR.6 A.APR.7 A.REI.1 A.REI.2 A.SSE.1a F.IF.7d</p>	<ul style="list-style-type: none"> <li>• Perform operations on rational expressions</li> <li>• Simplify rational expressions</li> </ul>		<p><a href="#">A.APR.D.6 Combined Fuel Efficiency</a></p> <p><a href="#">A.REI.A.1 Products and Reciprocals</a></p> <p><a href="#">A.REI.D.11 Ideal Gas Law</a></p>

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		<ul style="list-style-type: none"> <li>• Solve rational equations and inequalities using various methods</li> <li>• Graph rational functions</li> </ul>		
<p><b>Unit 7</b>  <b>Sequences and Series and Probability and Statistics (6 weeks)</b></p>	<p><b>F.IF.3</b>  <b>A.SSE.4</b>  <b>F.BF.2</b>  <b>F.BF.1a</b>  <b>S.CP.1</b>  <b>S.CP.2</b>  <b>S.CP.3</b>  <b>S.CP.4</b>  <b>S.CP.5</b>  <b>S.CP.7</b>  <b>S.CP.9</b></p>	<ul style="list-style-type: none"> <li>• Analyze and write arithmetic and geometric sequences and series and use each to solve problems</li> <li>• Find sums of infinite geometric series</li> <li>• Use recursive rules with sequences</li> <li>• Sample spaces, events, and probability</li> <li>• Analyzing and finding probabilities of independent and dependent events</li> <li>• Understand and create two-way frequency tables</li> <li>• Disjoint and overlapping events</li> <li>• Identify and find permutations and combinations</li> <li>• Interpreting and constructing binomial distributions</li> </ul>		<p><a href="#">F.BF.A.2 Snake on a Plane</a></p> <p><a href="#">S.CP.A.1 Describing Events</a></p> <p><a href="#">S.CP.A.2 Cards and Independence</a></p> <p><a href="#">S.CP.A.3 Lucky Envelopes</a></p> <p><a href="#">S.CP.A.4 Two-Way Tables and Probability</a></p> <p><a href="#">S.CP.A.5 Breakfast Before School</a></p> <p><a href="#">S.CP.B.6 The Titanic 1</a></p> <p><a href="#">S.CP.B.7 The Addition Rule</a></p> <p><a href="#">S.CP.B.7 Rain and Lightning</a></p>

**This document outlines in detail the answers to the following four questions:**

1. **What do we want our students to know?**
2. **How do we know if they learned it?**
3. **What do we do if they did not learn it?**
4. **What do we do when they did learn it?**

**Curricular Framework MATH-Algebra II**

<b>Unit 1 ALGEBRA II</b>		
<b>Content &amp; Practice Standards</b>	<b>Interdisciplinary Standards</b>	<b>Critical Knowledge &amp; Skills</b>
<ul style="list-style-type: none"> <li>● <b>F.IF.9</b></li> <li>● <b>F.BF.1a</b></li> <li>● <b>F.BF.3</b></li> <li>● <b>F.LE.2</b></li> <li>● <b>A.CED.2</b></li> <li>● <b>A.CED.3</b></li> <li>● <b>A.REI.6</b></li> <li>● <b>S.ID.61</b></li> <li>● <b>N.RN.2a</b></li> </ul>	<ul style="list-style-type: none"> <li>● <b>RI.11-12.7.</b> Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● <b>SL.11-12.4</b> Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● <b>8.1 Educational Technology:</b> All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</li> <li>● <b>A. Technology Operations and Concepts:</b> Students demonstrate a sound understanding of technology concepts, systems and operations</li> <li>● <b>B. Creativity and Innovation:</b> Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology.</li> <li>● <b>E: Research and Information Fluency:</b> Students apply digital tools to gather, evaluate, and use information.</li> <li>● <b>F: Critical thinking, problem solving, and decision making:</b> Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Evaluating expressions</li> <li>● Geometric transformations</li> <li>● Using a graphing calculator</li> <li>● Absolute value</li> <li>● Slope and slope intercept form</li> <li>● Solving systems of two variables</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Transformations of functions</li> <li>● Analysis of absolute value functions and transformations of these</li> <li>● Lines of fit</li> <li>● Using regression to find line of best fit on graphing calculator</li> <li>● Solving systems of three variables</li> </ul>

**Curricular Framework MATH-Algebra II**

Unit 1 ALGEBRA II	
Stage 1 – Desired Results	
UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Students will be able to identify families of functions, describe transformations of parent functions, and write functions representing combinations of transformations. Additionally, the will write equations of linear functions using points and slopes, find lines of fit and lines of best fit, and solve systems of linear equations in three variables algebraically.</p>	<ul style="list-style-type: none"> <li>• Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>
UNDERSTANDINGS	
<p>Students will understand that</p> <ul style="list-style-type: none"> <li>• Transformations of functions always relate to basic function notations such as <math>f(x-h)</math>, <math>f(x)+k</math> and <math>-f(x)</math></li> <li>• Many problems can be modeled using linear functions if there is a constant rate of change</li> <li>• Lines of best fit can be obtained using technology while simple lines of fit can be obtained by hand</li> </ul> <p>...</p>	
Students will know...	Students will be able to...
<ul style="list-style-type: none"> <li>• A parent function is the simplest function in a family that preserves the shape of the entire family</li> <li>• How transformations and the function expressions related, including the effects of a, h, k</li> <li>• Definition of slope and how it relates to a rate of change</li> <li>• How to effectively use the graphing calculator and the steps to plotting points and finding a line of best fit</li> <li>• How many solutions and of what type a system of equations may have</li> </ul>	<ul style="list-style-type: none"> <li>• Identify families of functions</li> <li>• Describe and write transformations of parent functions</li> <li>• Describe and write combinations of transformations</li> <li>• Write equations of linear functions using points and slopes</li> <li>• Fine lines of fit and lines of best fit</li> <li>• Solve a system of linear equations in two variables (review)</li> <li>• Solve a system of linear equations in three variables algebraically</li> </ul>
Stage 2 – Assessment Evidence	
<p>Performance Tasks:  <i>What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?</i></p> <p><b><u>Performance Tasks/Use of Technology</u></b></p> <ul style="list-style-type: none"> <li>• Secret of the Hanging Baskets Performance Task</li> </ul>	<p>Other Evidence:  <i>What other means of assessment will be used throughout this unit?</i></p> <p><b><u>Formative</u></b></p> <ul style="list-style-type: none"> <li>• Homework</li> <li>• Guided practice</li> <li>• Warm ups</li> <li>• Exit slips</li> <li>• Explorations</li> </ul>

## Curricular Framework MATH-Algebra II

- Discovery activity in 1.3 to investigate how to find lines of best fit on graphing calculator
- [www.quizlet.live.com](http://www.quizlet.live.com)
- [www.khanacademy.com](http://www.khanacademy.com)
- [www.desmos.com](http://www.desmos.com)

- Monitoring progress activities
- Matching activities
- Homework/pop/notebook quizzes
- Teacher observation
- Think Pair Share

### Summative

- Quiz on 1.1-1.2
- Test on 1.1-1.3
- Test/Quiz on 1.4
- LinkIt Assessment

### Stage 3 – Learning Plan

1.1 - Parent Functions and Transformations - focus on linear and absolute value when doing transformations. No horizontal stretches/shrinks in CP curriculum.

1.2 - Writing transformations - focus on linear and absolute value. No horizontal stretches/shrinks in CP. Be sure to watch order when writing as it can affect outcome. Check using graphing calculators.

1.3 - Writing equations of lines

1.4 Systems of three variables - start with a review of 2 variable systems.

### Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*



**Gifted & Talented:**

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

**Tier I:**

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial

- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

**Tier II:**

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

**Tier III:**

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

**ELL:**

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.

- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

**SPED:**

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students, including, but not limited to, special education, E.S.L. and basic skills.

- Menu Math (mostly for very low functioning students)
- Administer assessments in separate room in small groups, or individually. Use of resource room and supplemental.
- Specialized seating. Seat student where it would best fit needs. Example in front of board , next to teacher, or under certain lighting.
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, special lighting, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments as needed.
- Terminating a section of the test when a student has indicated that he/she has completed all the items he/she can. The examiner must ensure that the student has attempted all items in a section since items are not ordered by difficulty. When this accommodation is used, the test must be administered in a small group or individually to avoid distraction.
- Providing frequent breaks
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload

- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis
- Test Material modification. Large print versions, recorded versions, or braille.

Test Procedures. Read directions aloud and explain. reading test items aloud (do not read aloud or sign the reading passages in Language Arts Literacy –the reading items may be read or signed); ONLY the teacher who must read the test items aloud or sign is permitted to have a test booklet assigned to him/her for this task. Providing and ensuring that amplification (hearing aid and/or FM system) is in working order. Using a sign language or cued speech interpreter to sign or cue the directions or test items but NOT the reading passages. Masking a portion of the test booklet and/or answer folder to eliminate visual distractors or providing reading windows. Providing written directions on a separate sheet or transparency. . using an examiner who is familiar with the student. Providing manipulatives for math items e.g., number line, counting chips.

Response Modifications. having an examiner record the student's identification information on the test booklet and/or answer folder. Dictating oral responses to a scribe (examiner or proctor who writes from dictation) using a Braille writer to record responses. Signing responses to a sign language interpreter (student must indicate all punctuation and must spell all keywords). Recording responses on a word processor (all editorial functions MUST be disabled). Providing an augmentative communication device. Using a larger diameter or modified special grip # 2 pencil. Circling answers in the test booklet. Allowing separate additional continuation pages for writing tasks

#### **504:**

General program accommodations/adjustments or services are always made on a case-by-case basis and individualized. Accommodations are to be reasonable and are intended to provide persons with disabilities compensation for their functional limitation(s) due to a mental or physical impairment. Where Section 504 is concerned, accommodations are made to bring a student with a disability to the same starting point as a non-disabled student. Consequently, the accommodations defined in a Section 504 plan are those interventions that are not typically available to all students.

#### Environmental Strategies

- Provide a structured learning environment
- Make separate "space" for different types of tasks
- Possible adapting of non-academic times such as lunch, recess, and physical education
- Change student seating
- Utilize a study carrel

- Alter location or personal or classroom supplies for easier access or to minimize distraction
- Provide sensory breaks
- Provide a written or picture schedule

#### Organizational Strategies

- Model and reinforce organizational systems (i.e. color-coding)
- Write out homework assignments, check student's recording of assignments
- Tailor homework assignments toward student strengths
- Set time expectations for assignments
- Provide clues such as clock faces indicating beginning and ending times
- Teach study/organizational skills
- Schedule before or after school tutoring/homework assistance

#### Behavioral Strategies

- Use behavioral management techniques consistently within a classroom and across classes
- Implement behavioral/academic contracts
- Utilize positive verbal and/or nonverbal reinforcements
- Utilize logical consequences
- Confer with the student's parents (and student as appropriate)
- Establish a home/school communication system for behavior monitoring
- Post rules and consequences for classroom behavior
- Put student on daily/weekly progress report/contract
- Reinforce self-monitoring and self-recording of behaviors

#### Presentation Strategies

- Tape lessons so the student can listen to them again; allow students to tape lessons
- Use computer-aided instruction and other audiovisual equipment
- Select alternative textbooks, workbooks, or provide books on tape
- Highlight main ideas and supporting details in the book
- Provide copied material for extra practice (i.e. outlines, study guides)
- Prioritize drill and practice activities for relevance
- Vary the method of lesson presentation using multi-sensory techniques:
  - a) lecture plus overhead/board demonstration support
  - b) small groups required to produce a written product
  - c) large groups required to demonstrate a process
  - d) computer-assisted instruction

e) peer tutors or cross-age tutors

f) demonstrations, simulations

g) experiments

h) games

- Ask student to repeat/paraphrase context to check understanding
- Arrange for a mentor to work with student in his or her interest area or area of greatest strength
- Provide peer tutoring
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace
- Reinforce the use of compensatory strategies, i.e. pencil grip, mnemonic devices, “spell check”
- Vary kind of instructional materials used
- Assess whether student has the necessary prerequisite skills. Determine whether materials are appropriate to the student's current functioning levels
- Reinforce study skill strategies (survey, read, recite, review)
- Introduce definition of new terms/vocabulary and review to check for understanding
- Be aware of student's preferred learning style and provide matching instruction materials
- Pre-teach and/or re-teach important concepts • Prepare advanced organizers/study guides for new material

#### Assignments

- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Allow for assignments to be word processed
- Lower reading level of assignments
- Break assignments into a series of smaller assignments
- Use highlighted texts

#### Evaluation Methods

- Limit amount of material presented on a single page
- Provide a sample or practice test
- Provide for oral testing
- Provide tests in segments so that student hands in one segment before receiving the next part
- Provide personal copy of test tools and allow for color-coding/highlighting
- Adjust time for completion
- Modify weights of tests when grading

**Curricular Framework MATH-Algebra II**

<b>Unit 2 ALGEBRA II</b>		
<b>Content &amp; Practice Standards</b>	<b>Interdisciplinary Standards</b>	<b>Critical Knowledge &amp; Skills</b>
<ul style="list-style-type: none"> <li>● A.CED.2</li> <li>● A.APR.3</li> <li>● F.IF.1</li> <li>● F.IF.4</li> <li>● F.IF.7a</li> <li>● F.IF.9</li> <li>● G.GPE.2a</li> <li>● A.REI.4a</li> <li>● A.REI.4b</li> <li>● A.REI.7</li> <li>● A.CED.1</li> <li>● A.CED.3</li> <li>● F.IF.8</li> <li>● N.CN.1</li> <li>● N.CN.2</li> <li>● N.CN.7</li> <li>● N.CN.8</li> </ul>	<ul style="list-style-type: none"> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</li> <li>● A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations</li> <li>● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology.</li> <li>● E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.</li> <li>● F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Transformations from Unit 1</li> <li>● Distance formula</li> <li>● Solving equations in one variable</li> <li>● Finding x-intercepts</li> <li>● Basics of quadratic functions from Algebra I</li> <li>● Factoring</li> <li>● Simplifying square roots</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Graphing quadratic functions by hand and using technology</li> <li>● Finding key features of graphs of quadratic functions</li> <li>● Transformations of quadratic functions</li> <li>● Parabolas and their key features</li> <li>● Advanced factoring</li> <li>● Solving quadratic equations</li> <li>● Complex numbers and operations using these</li> <li>● Modeling with quadratics</li> <li>● Solving non-linear systems</li> <li>● Quadratic inequalities</li> </ul>

Unit 2 ALGEBRA II	
Stage 1 – Desired Results	
UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Students will be able to describe and write transformations of quadratic functions, graph quadratic functions using x-intercepts, write equations of parabolas and quadratic equations to model data sets. Students will be able to solve quadratic equations for real and complex solutions. They will additionally learn how to add, subtract, and multiply complex numbers. Students will also learn how to solve systems of nonlinear equations and solve and graph quadratic inequalities in two variables.</p>	<ul style="list-style-type: none"> <li>• Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>
UNDERSTANDINGS	
<p>Students will understand that...</p> <ul style="list-style-type: none"> <li>• The graph of a quadratic equation in two variables is the set of all its solutions plotted in the coordinate plane</li> <li>• A parabola is a conic figure that represents the set of points that are equidistant from a fixed point (focus) and a fixed line (directrix)</li> <li>• The solutions to quadratic equations relate to key points on a plane</li> <li>• There is a complex number, <math>i</math>, such that <math>i^2 = -1</math> and every complex number has the form <math>a+bi</math> with <math>a</math> and <math>b</math> real</li> <li>• A solution (real or complex) to a quadratic equation exists and can be found using various methods and skills</li> </ul>	
Students will know...	Students will be able to...
<ul style="list-style-type: none"> <li>• What a parabola is</li> <li>• The effects of transformations on quadratic functions</li> <li>• The steps to identifying a method and solving quadratic equations</li> <li>• Key aspects of quadratic functions and parabolas (vertex, focus, directrix, axis of symmetry)</li> <li>• As with real solutions, complex solutions to quadratic equations may be determined by taking square roots, factoring, and completing the square.</li> <li>• That the quadratic formula can be used to solve any equation in the form <math>ax^2 + bx + c = 0</math> where <math>a \neq 0</math> <ul style="list-style-type: none"> <li>• That the expression under the radical sign of the quadratic formula <math>b^2 - 4ac</math> is called the discriminant</li> </ul> </li> </ul>	<ul style="list-style-type: none"> <li>• Graph quadratic functions</li> <li>• Identify and graph key features of parabolas</li> <li>• Write and analyze transformations of quadratic functions</li> <li>• Factor quadratic expressions</li> <li>• Solve quadratic equations using multiple methods including graphically, algebraically and using technology, including those with complex solutions</li> <li>• Perform operations with complex numbers</li> <li>• Solve non-linear systems graphically and algebraically</li> <li>• Solve and graph quadratic inequalities and systems of quadratic inequalities</li> </ul>



- $i$  represents the  $\sqrt{-1}$

### Stage 2 – Assessment Evidence

#### Performance Tasks:

*What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?*

#### Performance Tasks/Use of Technology

- How to graph inequalities on graphing calculator investigation activity
- Big Ideas Performance Task: Algebra in Genetics: The Hardy-Weinberg Law
- Big Ideas Performance Task: Accident Reconstruction
- [www.quizlet.live.com](http://www.quizlet.live.com)
- [www.khanacademy.com](http://www.khanacademy.com)
- [www.desmos.com](http://www.desmos.com)

#### Other Evidence:

*What other means of assessment will be used throughout this unit?*

#### Formative

- Homework
- Guided practice
- Warm ups
- Exit slips
- Explorations
- Monitoring progress activities
- Matching activities
- Homework/pop/notebook quizzes
- Teacher observation
- Think Pair Share

#### Summative

- 2.1-2.2 Quiz
- 2.3 Quiz
- Chapter 2 Test
- Factoring Common Assessment
- 3.1-3.2 Quiz
- 3.1-3.3 Test
- 3.5 Quiz
- 3.4-3.6 Test
- LinkIt Assessment

### Stage 3 – Learning Plan

- 2.1 Transformations of Quadratic Functions - very similar to 1.1 and 1.2 but with quadratics
- 2.2 - Characteristics of Quadratic Functions - detailed graphs, key features including AOS and vertex, how to graph on calculator
- 2.3 - Focus of a Parabola - conic view of parabolas. Includes horizontal parabolas and features including focus and directrix
- 2.4 - Modeling with Quadratics - determine if a set of data is quadratic, modeling using graphing calculator
- 3.1 - Solving Quadratic Equations - review factoring first and do a factoring assessment
- 3.2 - Complex Numbers
- 3.3 Completing the Square - can sub with quadratic formula later on if students are struggling
- 3.4 - Quadratic Formula
- 3.5 - Non-Linear Systems - do algebraically and graphically using technology. Use calculator to check answers.
- 3.6 - Quadratic Inequalities - includes systems

### Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

#### Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

#### Tier I:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal

- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
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- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

**Tier II:**

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!

- Math Fact Fluency/Rocket Math

**Tier III:**

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

**ELL:**

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
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- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

**SPED:**

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students, including, but not limited to, special education, E.S.L. and basic skills.

- Menu Math (mostly for very low functioning students)
- Administer assessments in separate room in small groups, or individually. Use of resource room and supplemental.
- Specialized seating. Seat student where it would best fit needs. Example in front of board, next to teacher, or under certain lighting.
- Math Labs/Tutorial
- MobyMax

- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, special lighting, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments as needed.
- Terminating a section of the test when a student has indicated that he/she has completed all the items he/she can. The examiner must ensure that the student has attempted all items in a section since items are not ordered by difficulty. When this accommodation is used, the test must be administered in a small group or individually to avoid distraction.
- Providing frequent breaks
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis
- Test Material modification. Large print versions, recorded versions, or braille.

Test Procedures. Read directions aloud and explain. reading test items aloud (do not read aloud or sign the reading passages in Language Arts Literacy –the reading items may be read or signed); ONLY the teacher who must read the test items aloud or sign is permitted to have a test booklet assigned to him/her for this task. Providing and ensuring that amplification (hearing aid and/or FM system) is in working order. Using a sign language or cued speech interpreter to sign or cue the directions or test items but NOT the reading passages. Masking a portion of the test booklet and/or answer folder to eliminate visual distractors or providing reading windows. Providing written directions on a separate sheet or transparency. . using an examiner who is familiar with the student. Providing manipulatives for math items e.g., number line, counting chips.

Response Modifications. having an examiner record the student’s identification information on the test booklet and/or answer folder. Dictating oral responses to a scribe (examiner or proctor who writes from dictation) using a Braille writer to record responses. Signing responses to a sign language interpreter (student must indicate all punctuation and must spell all keywords). Recording responses on a word processor (all editorial functions MUST be disabled). Providing an augmentative communication device. Using a larger diameter or modified special grip # 2 pencil. Circling answers in the test booklet. Allowing separate additional continuation pages for writing tasks.

**504:**

General program accommodations/adjustments or services are always made on a case-by-case basis and individualized. Accommodations are to be reasonable and are intended to provide persons with disabilities compensation for their functional limitation(s) due to a mental or physical impairment. Where Section 504 is concerned, accommodations are made to bring a student with a disability to the same starting point as a non-disabled student. Consequently, the accommodations defined in a Section 504 plan are those interventions that are not typically available to all students.

**Environmental Strategies**

- Provide a structured learning environment
- Make separate "space" for different types of tasks
- Possible adapting of non-academic times such as lunch, recess, and physical education
- Change student seating
- Utilize a study carrel
- Alter location or personal or classroom supplies for easier access or to minimize distraction
- Provide sensory breaks
- Provide a written or picture schedule

**Organizational Strategies**

- Model and reinforce organizational systems (i.e. color-coding)
- Write out homework assignments, check student's recording of assignments
- Tailor homework assignments toward student strengths
- Set time expectations for assignments
- Provide clues such as clock faces indicating beginning and ending times
- Teach study/organizational skills
- Schedule before or after school tutoring/homework assistance

**Behavioral Strategies**

- Use behavioral management techniques consistently within a classroom and across classes
- Implement behavioral/academic contracts
- Utilize positive verbal and/or nonverbal reinforcements
- Utilize logical consequences
- Confer with the student's parents (and student as appropriate)
- Establish a home/school communication system for behavior monitoring
- Post rules and consequences for classroom behavior
- Put student on daily/weekly progress report/contract
- Reinforce self-monitoring and self-recording of behaviors

**Presentation Strategies**

- Tape lessons so the student can listen to them again; allow students to tape lessons
- Use computer-aided instruction and other audiovisual equipment
- Select alternative textbooks, workbooks, or provide books on tape
- Highlight main ideas and supporting details in the book
- Provide copied material for extra practice (i.e. outlines, study guides)
- Prioritize drill and practice activities for relevance
- Vary the method of lesson presentation using multi-sensory techniques:
  - a) lecture plus overhead/board demonstration support
  - b) small groups required to produce a written product
  - c) large groups required to demonstrate a process
  - d) computer-assisted instruction
  - e) peer tutors or cross-age tutors
  - f) demonstrations, simulations
  - g) experiments
  - h) games
- Ask student to repeat/paraphrase context to check understanding
- Arrange for a mentor to work with student in his or her interest area or area of greatest strength
- Provide peer tutoring
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace
- Reinforce the use of compensatory strategies, i.e. pencil grip, mnemonic devices, “spell check”
- Vary kind of instructional materials used
- Assess whether student has the necessary prerequisite skills. Determine whether materials are appropriate to the student's current functioning levels
- Reinforce study skill strategies (survey, read, recite, review)
- Introduce definition of new terms/vocabulary and review to check for understanding
- Be aware of student's preferred learning style and provide matching instruction materials
- Pre-teach and/or re-teach important concepts • Prepare advanced organizers/study guides for new material

#### Assignments

- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Allow for assignments to be word processed
- Lower reading level of assignments
- Break assignments into a series of smaller assignments
- Use highlighted texts

Evaluation Methods

- Limit amount of material presented on a single page
- Provide a sample or practice test
- Provide for oral testing
- Provide tests in segments so that student hands in one segment before receiving the next part
- Provide personal copy of test tools and allow for color-coding/highlighting
- Adjust time for completion
- Modify weights of tests when grading



**Curricular Framework MATH-Algebra II**

<b>Unit 3 ALGEBRA II</b>		
<b>Content &amp; Practice Standards</b>	<b>Interdisciplinary Standards</b>	<b>Critical Knowledge &amp; Skills</b>
<ul style="list-style-type: none"> <li>● A.APR.1</li> <li>● A.APR.2</li> <li>● A.APR.3</li> <li>● A.APR.4</li> <li>● A.APR.5</li> <li>● A.CED.2</li> <li>● A.SSE.2</li> <li>● F.IF.4</li> <li>● F.IF.7c</li> <li>● F.BF.3</li> </ul>	<ul style="list-style-type: none"> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</li> <li>● A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations</li> <li>● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology.</li> <li>● E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.</li> <li>● F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Factoring</li> <li>● Solving quadratic equations</li> <li>● Exponent properties</li> <li>● FOIL/Distributing</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Operations with polynomials</li> <li>● Dividing polynomials and synthetic division</li> <li>● Factoring polynomials</li> <li>● Solving polynomial equations</li> <li>● Graphing polynomial functions</li> </ul>

**Curricular Framework MATH-Algebra II**

<b>Unit 3 ALGEBRA II</b>	
<b>Stage 1 – Desired Results</b>	
<b>UNIT SUMMARY</b>	<b>CORE AND SUPPLEMENTAL MATERIALS/RESOURCES</b>
In this chapter, students will learn how to graph and analyze the graphs of polynomial functions, including transformations. They will also be able to perform operations on polynomials, factor and solve them. Lastly, they will be able to write polynomial functions when given solutions of the function.	<ul style="list-style-type: none"> <li>• Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>
<b>UNDERSTANDINGS</b>	
<p>Students will understand that...</p> <ul style="list-style-type: none"> <li>• Every polynomial has solutions equal to its highest degree</li> <li>• Polynomials form a system analogous to the integers that is closed under addition, subtraction, multiplication, and division</li> </ul>	
<b>Students will know...</b>	<b>Students will be able to...</b>
<ul style="list-style-type: none"> <li>• Like terms</li> <li>• The steps to adding, subtracting and multiplying polynomials</li> <li>• The steps to dividing polynomials using synthetic and long division</li> <li>• Fundamental Theorem of Algebra</li> <li>• Odd-degree functions will always have an odd number of real zeros. Even-degree functions will always have an even number of real zeros or no real zeros at all.</li> <li>• Every Polynomial equation with a degree greater than zero has at least one root in the set of complex numbers.</li> </ul>	<ul style="list-style-type: none"> <li>• Perform operations on polynomials</li> <li>• Divide polynomials</li> <li>• Solve polynomial equations</li> <li>• Evaluate polynomial functions</li> <li>• You can use a process similar to long division to divide a polynomial by a polynomial with more than one term.</li> <li>•</li> </ul>
<b>Stage 2 – Assessment Evidence</b>	
<p>Performance Tasks:  <i>What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?</i></p> <p><b><u>Performance Tasks/Use of Technology</u></b></p> <ul style="list-style-type: none"> <li>• Big Ideas Performance Task: For The Birds-Wildlife Management</li> <li>• Graphing calculators</li> </ul>	<p>Other Evidence:  <i>What other means of assessment will be used throughout this unit?</i></p> <p><b><u>Formative</u></b></p> <ul style="list-style-type: none"> <li>• Homework</li> <li>• Guided practice</li> <li>• Warm ups</li> <li>• Exit slips</li> <li>• Explorations</li> </ul>

## Curricular Framework MATH-Algebra II

- Desmos Online
- www.quizlet.live.com
- www.khanacademy.com

- Monitoring progress activities
- Matching activities
- Homework/pop/notebook quizzes
- Teacher observation
- Think Pair Share

### Summative

- Quiz 4.1-4.2
- Quiz 4.3
- Chapter 4 Test
- LinkIt Assessment

### Stage 3 – Learning Plan

- 4.1 - Graphing Polynomial Functions - focus on end behavior and working with tables by hand and on calculator
- 4.2 - Adding, Subtracting, and Multiplying Polynomials
- 4.3 - Dividing Polynomials - synthetic and long division
- 4.4 - Factoring Polynomials - special patterns, GCF, Sum/Diff cubes
- 4.5 Solving Polynomial Equations
- 4.6 - Writing Polynomials - given the zeroes, multiplicity, and coefficient

### Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

### Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
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- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options

- Big Ideas Mini-Assessments
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- [Discovery Education Math](#)
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**Tier I:**

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**Tier II:**

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
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**Tier III:**

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

**ELL:**

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
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- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

**SPED:**

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students, including, but not limited to, special education, E.S.L. and basic skills.

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- Administer assessments in separate room in small groups, or individually. Use of resource room and supplemental.
- Specialized seating. Seat student where it would best fit needs. Example in front of board , next to teacher, or under certain lighting.
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- Extended time to complete tests and assignments as needed.
- Terminating a section of the test when a student has indicated that he/she has completed all the items he/she can. The examiner must ensure that the student has attempted all items in a section since items are not ordered by difficulty. When this accommodation is used, the test must be administered in a small group or individually to avoid distraction.
- Providing frequent breaks
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task

- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis
- Test Material modification. Large print versions, recorded versions, or braille.

Test Procedures. Read directions aloud and explain. reading test items aloud (do not read aloud or sign the reading passages in Language Arts Literacy –the reading items may be read or signed); ONLY the teacher who must read the test items aloud or sign is permitted to have a test booklet assigned to him/her for this task. Providing and ensuring that amplification (hearing aid and/or FM system) is in working order. Using a sign language or cued speech interpreter to sign or cue the directions or test items but NOT the reading passages. Masking a portion of the test booklet and/or answer folder to eliminate visual distractors or providing reading windows. Providing written directions on a separate sheet or transparency. . using an examiner who is familiar with the student. Providing manipulatives for math items e.g., number line, counting chips.

Response Modifications. having an examiner record the student’s identification information on the test booklet and/or answer folder. Dictating oral responses to a scribe (examiner or proctor who writes from dictation) using a Braille writer to record responses. Signing responses to a sign language interpreter (student must indicate all punctuation and must spell all keywords). Recording responses on a word processor (all editorial functions MUST be disabled). Providing an augmentative communication device. Using a larger diameter or modified special grip # 2 pencil. Circling answers in the test booklet. Allowing separate additional continuation pages for writing tasks

**504:**

General program accommodations/adjustments or services are always made on a case-by-case basis and individualized. Accommodations are to be reasonable and are intended to provide persons with disabilities compensation for their functional limitation(s) due to a mental or physical impairment. Where Section 504 is concerned, accommodations are made to bring a student with a disability to the same starting point as a non-disabled student. Consequently, the accommodations defined in a Section 504 plan are those interventions that are not typically available to all students.

**Environmental Strategies**

- Provide a structured learning environment
- Make separate "space" for different types of tasks
- Possible adapting of non-academic times such as lunch, recess, and physical education
- Change student seating
- Utilize a study carrel
- Alter location or personal or classroom supplies for easier access or to minimize distraction
- Provide sensory breaks
- Provide a written or picture schedule

**Organizational Strategies**

- Model and reinforce organizational systems (i.e. color-coding)
- Write out homework assignments, check student's recording of assignments

- Tailor homework assignments toward student strengths
- Set time expectations for assignments
- Provide clues such as clock faces indicating beginning and ending times
- Teach study/organizational skills
- Schedule before or after school tutoring/homework assistance

#### Behavioral Strategies

- Use behavioral management techniques consistently within a classroom and across classes
- Implement behavioral/academic contracts
- Utilize positive verbal and/or nonverbal reinforcements
- Utilize logical consequences
- Confer with the student's parents (and student as appropriate)
- Establish a home/school communication system for behavior monitoring
- Post rules and consequences for classroom behavior
- Put student on daily/weekly progress report/contract
- Reinforce self-monitoring and self-recording of behaviors

#### Presentation Strategies

- Tape lessons so the student can listen to them again; allow students to tape lessons
- Use computer-aided instruction and other audiovisual equipment
- Select alternative textbooks, workbooks, or provide books on tape
- Highlight main ideas and supporting details in the book
- Provide copied material for extra practice (i.e. outlines, study guides)
- Prioritize drill and practice activities for relevance
- Vary the method of lesson presentation using multi-sensory techniques:
  - a) lecture plus overhead/board demonstration support
  - b) small groups required to produce a written product
  - c) large groups required to demonstrate a process
  - d) computer-assisted instruction
  - e) peer tutors or cross-age tutors
  - f) demonstrations, simulations
  - g) experiments
  - h) games
- Ask student to repeat/paraphrase context to check understanding
- Arrange for a mentor to work with student in his or her interest area or area of greatest strength
- Provide peer tutoring



- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace
- Reinforce the use of compensatory strategies, i.e. pencil grip, mnemonic devices, “spell check”
- Vary kind of instructional materials used
- Assess whether student has the necessary prerequisite skills. Determine whether materials are appropriate to the student's current functioning levels
- Reinforce study skill strategies (survey, read, recite, review)
- Introduce definition of new terms/vocabulary and review to check for understanding
- Be aware of student's preferred learning style and provide matching instruction materials
- Pre-teach and/or re-teach important concepts • Prepare advanced organizers/study guides for new material

#### Assignments

- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Allow for assignments to be word processed
- Lower reading level of assignments
- Break assignments into a series of smaller assignments
- Use highlighted texts

#### Evaluation Methods

- Limit amount of material presented on a single page
- Provide a sample or practice test
- Provide for oral testing
- Provide tests in segments so that student hands in one segment before receiving the next part
- Provide personal copy of test tools and allow for color-coding/highlighting
- Adjust time for completion
- Modify weights of tests when grading

Curricular Framework MATH-Algebra II

Unit 4 ALGEBRA II		
Content & Practice Standards	Interdisciplinary Standards	Critical Knowledge & Skills
<ul style="list-style-type: none"> <li>● A.REI.1</li> <li>● A.REI.2</li> <li>● N.RN.1</li> <li>● N.RN.2</li> <li>● F.BF.1b</li> <li>● F.BF.3</li> <li>● F.BF.4a</li> </ul>	<ul style="list-style-type: none"> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</li> <li>● A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations</li> <li>● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology.</li> <li>● E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.</li> <li>● F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Simplifying radicals</li> <li>● Exponent properties</li> <li>● Function notation</li> <li>● Simple domain and range</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Rational exponents</li> <li>● nth roots</li> <li>● Graphs of radicals</li> <li>● Radical equations</li> <li>● Function operations</li> <li>● Function compositions</li> <li>● Inverse functions</li> </ul>

**Curricular Framework MATH-Algebra II**

<b>Unit 4 ALGEBRA II</b>	
<b>Stage 1 – Desired Results</b>	
<b>UNIT SUMMARY</b>	<b>CORE AND SUPPLEMENTAL MATERIALS/RESOURCES</b>
In this chapter, students will learn how to solve radical equations and using rational exponents to simplify expressions. They will learn the relationship between an exponent and a root. Additionally, they will graph radical functions and explore inverses of functions.	<ul style="list-style-type: none"> <li>• Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>
<b>UNDERSTANDINGS</b>	
<p>Students will understand that...</p> <ul style="list-style-type: none"> <li>• Rational exponents and radicals are connected</li> <li>• Domain and range can change for different functions and can be determined from a graph</li> <li>• Extraneous solutions can arise when changing the look of a function during the solving process</li> </ul>	
<b>Students will know...</b>	<b>Students will be able to...</b>
<ul style="list-style-type: none"> <li>• Rational exponents and their definition</li> <li>• Perfect exponent rules</li> <li>• What an inverse function is</li> <li>• What an extraneous solution is and when they can appear</li> <li>• Rules for rewriting rational exponents and radicals</li> <li>• How to enter rational exponents and nth roots on calculator</li> </ul>	<ul style="list-style-type: none"> <li>• Perform operations on functions</li> <li>• Find the inverse of functions and relations</li> <li>• Identify if two functions or relations are inverses</li> <li>• Graph and analyze square root functions and inequalities</li> <li>• Solve equations and inequalities containing radicals</li> <li>• Perform operations with rational expressions</li> <li>• Convert between rational exponents and radical form</li> <li>• Solve radical equations and inequalities</li> </ul>
<b>Stage 2 – Assessment Evidence</b>	
<p>Performance Tasks:  <i>What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?</i></p> <p><b><u>Performance Tasks/Use of Technology</u></b></p>	<p>Other Evidence:  <i>What other means of assessment will be used throughout this unit?</i></p> <p><b><u>Formative</u></b></p> <ul style="list-style-type: none"> <li>• Homework</li> <li>• Guided practice</li> <li>• Warm ups</li> </ul>

## Curricular Framework MATH-Algebra II

- Graphing Calculators
- kahoot
- www.quizlet.live.com
- www.khanacademy.com
- www.desmos.com

- Exit slips
- Explorations
- Monitoring progress activities
- Matching activities
- Homework/pop/notebook quizzes
- Teacher observation
- Think Pair Share

### Summative

- 5.1-5.2 Quiz
- 5.1-5.4 Test
- 5.5-5.6 Assessment
- LinkIt Assessment

### Stage 3 – Learning Plan

- 5.1 - nth Roots and Rational Exponents - rules for rewriting radicals and exponents back and forth. How to enter these on calculator.
- 5.2 - Properties of Rational Exponents and Radicals
- 5.3 - Graphing Radical Functions - use calculator. Find domain and range
- 5.4 - Solving Radical Equations and Inequalities
- 5.5 - Function Operations - plus compositions
- 5.6 - Inverse of a Function

### Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

### Gifted & Talented:

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet

- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

**Tier I:**

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)

- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

**Tier II:**

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

**Tier III:**

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

**ELL:**

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.
- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.

- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

**SPED:**

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students, including, but not limited to, special education, E.S.L. and basic skills.

- Menu Math (mostly for very low functioning students)
- Administer assessments in separate room in small groups, or individually. Use of resource room and supplemental.
- Specialized seating. Seat student where it would best fit needs. Example in front of board , next to teacher, or under certain lighting.
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, special lighting, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments as needed.
- Terminating a section of the test when a student has indicated that he/she has completed all the items he/she can. The examiner must ensure that the student has attempted all items in a section since items are not ordered by difficulty. When this accommodation is used, the test must be administered in a small group or individually to avoid distraction.
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- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions

- Use task analysis to break down activities and lessons into each individual step needed to complete the task
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- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
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- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
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#### Environmental Strategies

- Provide a structured learning environment
- Make separate "space" for different types of tasks
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- Change student seating
- Utilize a study carrel
- Alter location or personal or classroom supplies for easier access or to minimize distraction
- Provide sensory breaks
- Provide a written or picture schedule

#### Organizational Strategies

- Model and reinforce organizational systems (i.e. color-coding)



- Write out homework assignments, check student's recording of assignments
- Tailor homework assignments toward student strengths
- Set time expectations for assignments
- Provide clues such as clock faces indicating beginning and ending times
- Teach study/organizational skills
- Schedule before or after school tutoring/homework assistance

#### Behavioral Strategies

- Use behavioral management techniques consistently within a classroom and across classes
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- Utilize positive verbal and/or nonverbal reinforcements
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- Confer with the student's parents (and student as appropriate)
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#### Presentation Strategies

- Tape lessons so the student can listen to them again; allow students to tape lessons
- Use computer-aided instruction and other audiovisual equipment
- Select alternative textbooks, workbooks, or provide books on tape
- Highlight main ideas and supporting details in the book
- Provide copied material for extra practice (i.e. outlines, study guides)
- Prioritize drill and practice activities for relevance
- Vary the method of lesson presentation using multi-sensory techniques:
  - a) lecture plus overhead/board demonstration support
  - b) small groups required to produce a written product
  - c) large groups required to demonstrate a process
  - d) computer-assisted instruction
  - e) peer tutors or cross-age tutors
  - f) demonstrations, simulations
  - g) experiments
  - h) games
- Ask student to repeat/paraphrase context to check understanding
- Arrange for a mentor to work with student in his or her interest area or area of greatest strength

- Provide peer tutoring
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace
- Reinforce the use of compensatory strategies, i.e. pencil grip, mnemonic devices, “spell check”
- Vary kind of instructional materials used
- Assess whether student has the necessary prerequisite skills. Determine whether materials are appropriate to the student's current functioning levels
- Reinforce study skill strategies (survey, read, recite, review)
- Introduce definition of new terms/vocabulary and review to check for understanding
- Be aware of student's preferred learning style and provide matching instruction materials
- Pre-teach and/or re-teach important concepts • Prepare advanced organizers/study guides for new material

#### Assignments

- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Allow for assignments to be word processed
- Lower reading level of assignments
- Break assignments into a series of smaller assignments
- Use highlighted texts

#### Evaluation Methods

- Limit amount of material presented on a single page
- Provide a sample or practice test
- Provide for oral testing
- Provide tests in segments so that student hands in one segment before receiving the next part
- Provide personal copy of test tools and allow for color-coding/highlighting
- Adjust time for completion
- Modify weights of tests when grading

**Curricular Framework MATH-Algebra II**

<b>Unit 5 ALGEBRA II</b>		
<b>Content &amp; Practice Standards</b>	<b>Interdisciplinary Standards</b>	<b>Critical Knowledge &amp; Skills</b>
<ul style="list-style-type: none"> <li>● A.SSE.1b</li> <li>● A.SSE.2</li> <li>● A.SSE.3c</li> <li>● F.IF.7e</li> <li>● F.LE.3</li> <li>● F.LE.4</li> <li>● F.LE.5</li> <li>● F.IF.8b</li> </ul>	<ul style="list-style-type: none"> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Linear Functions</li> <li>● Quadratic Functions</li> <li>● Polynomial Functions</li> <li>● Radical Functions</li> <li>● Exponent Properties</li> <li>● Order of Operations</li> <li>● Interest</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Exponential Functions</li> <li>● Natural base e</li> <li>● Logarithm Properties</li> <li>● Logarithmic Functions</li> <li>● Exponential and Logarithmic Equations</li> </ul>
<b>Unit 5 ALGEBRA II</b>		
<b>Stage 1 – Desired Results</b>		
<b>UNIT SUMMARY</b>	<b>CORE AND SUPPLEMENTAL MATERIALS/RESOURCES</b>	
<p>Students will be able to work with applications of and analyze both exponential growth and decay functions. The natural base, e, is introduced and modeling applications are discussed. Applications and algebra using logarithms and logarithmic functions with various bases end the chapter. The chapter focuses on analytical, numerical, and graphical approaches to modeling and solving real world problems.</p>	<ul style="list-style-type: none"> <li>● Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>	

## Curricular Framework MATH-Algebra II

UNDERSTANDINGS	
<p>Students will understand that...</p> <ul style="list-style-type: none"> <li>● Exponential functions represent a large group of different types of formulae including growth, decay, and compounding interest</li> <li>● Logarithmic functions and exponential functions are inverses and each operation can be used to solve for the other</li> <li>● The natural base, <math>e</math>, is an irrational number with applications in real world modeling</li> </ul>	
Students will know...	Students will be able to...
<ul style="list-style-type: none"> <li>● That exponential growth with a constant percent increase over specific time period can be modeled using the following function <math>A(t) = a(1 + r)^t</math></li> <li>● The definition of logarithms can also be used to write exponential equations in logarithmic form.</li> <li>● How to use the change of base formula</li> <li>● If a scenario represents compound interest and if this is continuous or discrete</li> <li>● The same strategies that are used to solve exponential equations can be used to solve exponential inequalities</li> <li>● Continuously compounded interest can be calculated using the formula <math>A = Pe^{rt}</math></li> </ul>	<ul style="list-style-type: none"> <li>● Graph and transform exponential growth and decay functions.</li> <li>● Solve exponential equations and inequalities.</li> <li>● Evaluate and graph logarithmic functions</li> <li>● Solve logarithmic equations and inequalities</li> <li>● Simplify and evaluate expressions using the properties of logarithms</li> <li>● Solve exponential equations and inequalities using common logarithms</li> <li>● Evaluate expressions using the natural base and the natural logarithm</li> <li>● Correctly use compound interest formulas</li> </ul>
Stage 2 – Assessment Evidence	
<p>Performance Tasks: <i>What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?</i></p> <p><b><u>Performance Tasks/Use of Technology</u></b></p> <ul style="list-style-type: none"> <li>● Big Ideas Performance Task: Measuring Natural Disasters</li> <li>● \$1 Million dollars today or \$.01 double for a month activity</li> <li>● <a href="http://www.quizlet.live.com">www.quizlet.live.com</a></li> <li>● <a href="http://www.khanacademy.com">www.khanacademy.com</a></li> <li>● <a href="http://www.desmos.com">www.desmos.com</a></li> </ul>	<p>Other Evidence: <i>What other means of assessment will be used throughout this unit?</i></p> <p><b><u>Formative</u></b></p> <ul style="list-style-type: none"> <li>● Homework</li> <li>● Guided practice</li> <li>● Warm ups</li> <li>● Exit slips</li> <li>● Explorations</li> <li>● Monitoring progress activities</li> <li>● Matching activities</li> <li>● Homework/pop/notebook quizzes</li> <li>● Teacher observation</li> <li>● Think Pair Share</li> </ul>

	<p><b>Summative</b></p> <ul style="list-style-type: none"> <li>● Exponential Quiz</li> <li>● Logarithmic Quiz</li> <li>● Chapter 6 Test</li> <li>● LinkIt Assessment</li> </ul>
<b>Stage 3 – Learning Plan</b>	
<ul style="list-style-type: none"> <li>● 6.1 Exponential Growth and Decay Functions - intro to exponential functions. Spend some time reviewing exponent properties briefly.</li> <li>● 6.1 Natural Base e - what is e? Applications in business, science and technology. Compound interest.</li> <li>● 6.3 Logarithms and Logarithmic Functions</li> <li>● 6.4 Transformations of Exponential and Logarithmic Functions - use graphing calculator and other technology as aid</li> <li>● 6.5 Properties of Logarithms</li> <li>● 6.6 Solving Exponential and Logarithmic Equations</li> <li>● 6.7 Modeling with Exponential and Logarithmic Functions</li> </ul>	
<b>Planned Differentiation &amp; Interventions for Tiers I, II, III, ELL, SPED, and Gift &amp; Talented Students</b>	
<ul style="list-style-type: none"> <li>• <i>Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.</i></li> <li>• <i>Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.</i></li> <li>• <i>Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.</i></li> </ul>	
<p><b>Gifted &amp; Talented:</b></p> <ul style="list-style-type: none"> <li>● “Differentiating the Lesson” in Big Ideas online resources for all sections</li> <li>● “Additional Topics” in Big Ideas online resources to extend and enhance instruction</li> <li>● Big Ideas Game Closet</li> <li>● Big Ideas Differentiated Instruction options</li> <li>● Big Ideas Mini-Assessments</li> <li>● Design Challenges</li> <li>● Student Choice/Driven Activities</li> <li>● Group Projects</li> <li>● MobyMax</li> <li>● LinkIt!</li> <li>● Rocket Math</li> <li>● <a href="#">Intervention Central</a></li> <li>● <a href="#">Do to Learn</a></li> <li>● <a href="#">Differentiation Strategies for Math</a></li> <li>● <a href="#">Discovery Education Math</a></li> </ul>	

- [Everyday Mathematics](#)
- [Homework Spot](#)
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**Tier I:**

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- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
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**Tier II:**

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources

- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
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**Tier III:**

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

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**SPED:**

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students, including, but not limited to, special education, E.S.L. and basic skills.

- Menu Math (mostly for very low functioning students)

## Curricular Framework MATH-Algebra II

- Administer assessments in separate room in small groups, or individually. Use of resource room and supplemental.
- Specialized seating. Seat student where it would best fit needs. Example in front of board , next to teacher, or under certain lighting.
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, special lighting, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments as needed.
- Terminating a section of the test when a student has indicated that he/she has completed all the items he/she can. The examiner must ensure that the student has attempted all items in a section since items are not ordered by difficulty. When this accommodation is used, the test must be administered in a small group or individually to avoid distraction.
- Providing frequent breaks
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload
- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
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- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis
- Test Material modification. Large print versions, recorded versions, or braille.

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Response Modifications. having an examiner record the student's identification information on the test booklet and/or answer folder. Dictating oral responses to a scribe (examiner or proctor who writes from dictation) using a Braille writer to record responses. Signing responses to a sign language interpreter (student must indicate all punctuation and must spell all keywords). Recording responses on a word processor (all editorial functions MUST be disabled). Providing an augmentative communication device. Using a larger diameter or modified special grip # 2 pencil. Circling answers in the test booklet. Allowing separate additional continuation pages for writing tasks

**504:**

General program accommodations/adjustments or services are always made on a case-by-case basis and individualized. Accommodations are to be reasonable and are intended to provide persons with disabilities compensation for their functional limitation(s) due to a mental or physical impairment. Where Section 504 is concerned, accommodations are made to bring a student with a disability to the same starting point as a non-disabled student. Consequently, the accommodations defined in a Section 504 plan are those interventions that are not typically available to all students.

Environmental Strategies

- Provide a structured learning environment
- Make separate "space" for different types of tasks
- Possible adapting of non-academic times such as lunch, recess, and physical education
- Change student seating
- Utilize a study carrel
- Alter location or personal or classroom supplies for easier access or to minimize distraction
- Provide sensory breaks
- Provide a written or picture schedule

Organizational Strategies

- Model and reinforce organizational systems (i.e. color-coding)
- Write out homework assignments, check student's recording of assignments
- Tailor homework assignments toward student strengths
- Set time expectations for assignments
- Provide clues such as clock faces indicating beginning and ending times
- Teach study/organizational skills
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- Use behavioral management techniques consistently within a classroom and across classes
- Implement behavioral/academic contracts
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- Utilize logical consequences
- Confer with the student's parents (and student as appropriate)

- Establish a home/school communication system for behavior monitoring
- Post rules and consequences for classroom behavior
- Put student on daily/weekly progress report/contract
- Reinforce self-monitoring and self-recording of behaviors

#### Presentation Strategies

- Tape lessons so the student can listen to them again; allow students to tape lessons
- Use computer-aided instruction and other audiovisual equipment
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  - a) lecture plus overhead/board demonstration support
  - b) small groups required to produce a written product
  - c) large groups required to demonstrate a process
  - d) computer-assisted instruction
  - e) peer tutors or cross-age tutors
  - f) demonstrations, simulations
  - g) experiments
  - h) games
- Ask student to repeat/paraphrase context to check understanding
- Arrange for a mentor to work with student in his or her interest area or area of greatest strength
- Provide peer tutoring
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace
- Reinforce the use of compensatory strategies, i.e. pencil grip, mnemonic devices, “spell check”
- Vary kind of instructional materials used
- Assess whether student has the necessary prerequisite skills. Determine whether materials are appropriate to the student's current functioning levels
- Reinforce study skill strategies (survey, read, recite, review)
- Introduce definition of new terms/vocabulary and review to check for understanding
- Be aware of student's preferred learning style and provide matching instruction materials
- Pre-teach and/or re-teach important concepts • Prepare advanced organizers/study guides for new material

#### Assignments

- Modify the amount of homework
- Use written directions to supplement oral directions

- Reduce paper and pencil tasks
- Allow for assignments to be word processed
- Lower reading level of assignments
- Break assignments into a series of smaller assignments
- Use highlighted texts

#### Evaluation Methods

- Limit amount of material presented on a single page
- Provide a sample or practice test
- Provide for oral testing
- Provide tests in segments so that student hands in one segment before receiving the next part
- Provide personal copy of test tools and allow for color-coding/highlighting
- Adjust time for completion
- Modify weights of tests when grading

**Curricular Framework MATH-Algebra II**

<b>Unit 6 ALGEBRA II</b>		
<b>Content &amp; Practice Standards</b>	<b>Interdisciplinary Standards</b>	<b>Critical Knowledge &amp; Skills</b>
<ul style="list-style-type: none"> <li>● A.APR.6</li> <li>● A.APR.7</li> <li>● A.REI.1</li> <li>● A.REI.2</li> <li>● A.SSE.1a</li> <li>● F.IF.7d</li> </ul>	<ul style="list-style-type: none"> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</li> <li>● A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations</li> <li>● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and processes using technology.</li> <li>● E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.</li> <li>● F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Linear Functions</li> <li>● Exponent Properties</li> <li>● Operations with Fractions</li> <li>● Rational Numbers</li> <li>● Direct Variation</li> <li>● Proportions</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Inverse Variation</li> <li>● Joint and Combined Variation</li> <li>● Rational Functions</li> <li>● Asymptotes</li> <li>● Graphing Rational Functions</li> <li>● Operations with Rational Expressions</li> <li>● Solving Rational Equations</li> </ul>

**Curricular Framework MATH-Algebra II**

Unit 6 ALGEBRA II	
Stage 1 – Desired Results	
UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Students will be able to add, subtract, multiply, and divide rational expressions. They should be able to solve rational equations and inequalities. Simplify radical expressions and rational exponents.</p>	<ul style="list-style-type: none"> <li>• Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>
UNDERSTANDINGS	
<p>Students will understand that...</p> <ul style="list-style-type: none"> <li>• Rational expressions form a system analogous to integers that is closed under addition, subtraction, multiplication, and division</li> <li>• Denominators in rational expressions interfere with domain and range and lead to asymptotes when graphing</li> <li>• Common denominators are necessary for addition and subtraction of all rational expressions and fractions in general</li> </ul>	
Students will know...	Students will be able to...
<ul style="list-style-type: none"> <li>• Rational expressions must have common denominators to be added or subtracted</li> <li>• An asymptote is a line that the graph of a function approaches</li> <li>• Vertical asymptotes show where a function is undefined, while horizontal asymptotes show the end behavior of a rational function</li> <li>• How to add, subtract, multiply, and divide rational expressions</li> <li>• How to solve rational equations</li> <li>• What inverse variation is and where it is used in real world</li> <li>• When a function may have a slant asymptote</li> </ul>	<ul style="list-style-type: none"> <li>• Simplify rational expressions</li> <li>• Determine the LCM of polynomials</li> <li>• Add, subtract, multiply, and divide rational expressions</li> <li>• Determine properties of, and graph, reciprocal functions</li> <li>• Graph rational functions with vertical and horizontal asymptotes.</li> <li>• Recognize and solve direct, joint, and inverse variation problems</li> <li>• Solve rational equations and inequalities</li> </ul>
Stage 2 – Assessment Evidence	
<p>Performance Tasks: <i>What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?</i></p>	<p>Other Evidence: <i>What other means of assessment will be used throughout this unit?</i></p> <p><b><u>Formative</u></b></p> <ul style="list-style-type: none"> <li>• Homework</li> </ul>

## Curricular Framework MATH-Algebra II

<p><b><u>Performance Tasks/Use of Technology</u></b></p> <ul style="list-style-type: none"> <li>● Big Ideas Performance Task: Circuit Design</li> <li>● Inverse/Direct variation explorations</li> <li>● <a href="http://www.quizlet.live.com">www.quizlet.live.com</a></li> <li>● <a href="http://www.khanacademy.com">www.khanacademy.com</a></li> <li>● <a href="http://www.desmos.com">www.desmos.com</a></li> </ul>	<ul style="list-style-type: none"> <li>● Guided practice</li> <li>● Warm ups</li> <li>● Exit slips</li> <li>● Explorations</li> <li>● Monitoring progress activities</li> <li>● Matching activities</li> <li>● Homework/pop/notebook quizzes</li> <li>● Teacher observation</li> <li>● Think Pair Share</li> </ul> <p><b><u>Summative</u></b></p> <ul style="list-style-type: none"> <li>● 7.1-7.2 Quiz</li> <li>● 7.3-7.4 Quiz</li> <li>● Chapter 7 Test</li> <li>● LinkIt Assessment</li> </ul>
<b>Stage 3 – Learning Plan</b>	
<ul style="list-style-type: none"> <li>● 7.1 Inverse Variation - go through direct variation and joint variation as well. Review proportions and unit conversion techniques</li> <li>● 7.2 Graphing Rational Functions - asymptotes and what they are. Why do they occur? - denominators. Use technology as aid.</li> <li>● 7.3 Multiplying and Dividing Rational Expressions - factor first if possible</li> <li>● 7.4 Adding and Subtracting Rational Expressions - common denominator practice with simple fractions first</li> <li>● 7.5 Solving Rational Equations - Solving proportions review, technology to check answers</li> </ul>	
<b>Planned Differentiation &amp; Interventions for Tiers I, II, III, ELL, SPED, and Gift &amp; Talented Students</b>	
<p>• <i>Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.</i></p> <p>• <i>Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.</i></p> <p>• <i>Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.</i></p>	
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Curricular Framework MATH-Algebra II

Unit 7 ALGEBRA II		
Content & Practice Standards	Interdisciplinary Standards	Critical Knowledge & Skills
<ul style="list-style-type: none"> <li>● F.IF.3</li> <li>● A.SSE.4</li> <li>● F.BF.2</li> <li>● F.BF.1a</li> <li>● S.CP.1</li> <li>● S.CP.2</li> <li>● S.CP.3</li> <li>● S.CP.4</li> <li>● S.CP.5</li> <li>● S.CP.7</li> <li>● S.CP.9</li> </ul>	<ul style="list-style-type: none"> <li>● RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.</li> <li>● SL.11-12.4 Present information, findings and supporting evidence clearly, concisely, and logically. The content, organization, development, and style are appropriate to task, purpose, and audience.</li> <li>● 8.1 Educational Technology: All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and to create and communicate knowledge.</li> <li>● A. Technology Operations and Concepts: Students demonstrate a sound understanding of technology concepts, systems and operations</li> <li>● B. Creativity and Innovation: Students demonstrate creative thinking, construct knowledge and develop innovative products and process using technology.</li> <li>● E: Research and Information Fluency: Students apply digital tools to gather, evaluate, and use information.</li> <li>● F: Critical thinking, problem solving, and decision making: Students use critical thinking skills to plan and conduct research, manage projects, solve problems, and make informed decisions using appropriate digital tools and resources.</li> </ul>	<p>Previous Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Patterns</li> <li>● Evaluating Functions and Expressions</li> <li>● Order of Operations</li> </ul> <p>New Knowledge &amp; Skills</p> <ul style="list-style-type: none"> <li>● Sequences and Series</li> <li>● Limits</li> <li>● Arithmetic and Geometric Series</li> <li>● Sums of Infinite Series</li> <li>● Recursive Rules with Sequences</li> </ul>

**Curricular Framework MATH-Algebra II**

Unit 7 ALGEBRA II	
Stage 1 – Desired Results	
UNIT SUMMARY	CORE AND SUPPLEMENTAL MATERIALS/RESOURCES
<p>Students will study geometric and arithmetic sequences. Learning how to add terms of a sequence and understand partial sums and sums of infinite geometric series, both numerically and graphically. Recursively defined functions are introduced including connections to linear and exponential functions in previous chapters. Students will have a foundation in basic probability. This unit will build on this knowledge and focus on more advanced probability concepts including sample space, independent/dependent probabilities, compound events, and joint probabilities. Permutations and combinations are also introduced as well as two-way frequency tables.</p>	<ul style="list-style-type: none"> <li>• Big Ideas Algebra II Textbook, Worksheets, Big Ideas Teacher Resources, Pizzaz Worksheets, Ti-83 or equivalent Graphing Calculators, Desmos Online Graphing Calculator, Delta Math, Kuta Practice, Socrative, NJCTL</li> </ul>
UNDERSTANDINGS	
<p>Students will understand that...</p> <ul style="list-style-type: none"> <li>• Probability is the likelihood of an event occurring</li> <li>• Sequences and series can be used in real world modeling</li> <li>• Rules can be written for finding sums of infinite series</li> <li>• Probabilities of events can change depending on if they are dependent or inclusive with other events</li> </ul>	
Students will know...	Students will be able to...
<p><i>What content will be covered that students must master?</i></p>	<p><i>What should students be able to accomplish to demonstrate understanding?</i></p>
Stage 2 – Assessment Evidence	
<p>Performance Tasks: <i>What projects, hands-on lessons, use of manipulatives, active participation in new situations, etc. will reveal evidence of meaning-making and transfer (true understanding)?</i></p> <p><b><u>Performance Tasks/Use of Technology</u></b></p> <ul style="list-style-type: none"> <li>• Big Ideas Performance Task: Integrate Circuits and Moore’s Law</li> <li>• Big Ideas Performance Task: A New Dartboard</li> <li>• Writing rules for sequences exploration</li> <li>• Probability explorations for sample spaces</li> <li>• <a href="http://www.quizlet.live.com">www.quizlet.live.com</a></li> </ul>	<p>Other Evidence: <i>What other means of assessment will be used throughout this unit?</i></p> <p><b><u>Formative</u></b></p> <ul style="list-style-type: none"> <li>• Homework</li> <li>• Guided practice</li> <li>• Warm ups</li> <li>• Exit slips</li> <li>• Explorations</li> <li>• Monitoring progress activities</li> <li>• Matching activities</li> <li>• Homework/pop/notebook quizzes</li> </ul>

## Curricular Framework MATH-Algebra II

- www.khanacademy.com
- www.desmos.com

- Teacher observation
- Think Pair Share

### Summative

- Quiz 8.1-8.3
- Test Chapter 8
- Quiz 10.1-10.3
- Quiz 10.5
- Test Chapter 10
- LinkIt Assessments

### Stage 3 – Learning Plan

- 8.1 Defining and Using Sequences and Series
- 8.2 Analyzing Arithmetic Sequences and Series
- 8.3 Analyzing Geometric Sequences and Series
- 8.4 Finding Sums of Infinite Geometric Series
- 8.5 Using Recursive Rules with Sequences
- 10.1 Sample Spaces and Probability
- 10.2 Independent and Dependent Events
- 10.3 Two-way tables and Probability
- 10.4 Probability of Disjoint and Overlapping Events
- 10.5 Permutations and Combinations
- 10.6 Binomial Distributions

### Planned Differentiation & Interventions for Tiers I, II, III, ELL, SPED, and Gift & Talented Students

- *Rethink and revise. Dig deeper into ideas at issue (through the faces of understanding). Revise, rehearse, and refine, as needed. Guide students in self-assessment and self-adjustment, based on feedback from inquiry, results, and discussion.*
- *Evaluate understandings. Reveal what has been understood through final performances and products. Involve students in a final self-assessment to identify remaining questions, set future goals, and point toward new units and lessons.*
- *Tailor (personalize) the work to ensure maximum interest and achievement. Differentiate the approaches used and provide sufficient options and variety (without compromising goals) to make it most likely that all students will be engaged and effective.*

**Gifted & Talented:**

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- “Additional Topics” in Big Ideas online resources to extend and enhance instruction
- Big Ideas Game Closet
- Big Ideas Differentiated Instruction options
- Big Ideas Mini-Assessments
- Design Challenges
- Student Choice/Driven Activities
- Group Projects
- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Math Fact Fluency](#)

**Tier I:**

- “Differentiating the Lesson” in Big Ideas online resources for all sections
- Big Ideas MATH Pyramid of Tiered Interventions for additional resources
- Record and Practice Journal
- Differentiated Instruction options
- Fair Game Review
- Vocabulary Support Glossary resources
- Mini-Assessments
- Game Closet
- Lesson Tutorials
- Flash Cards
- Extended Time
- Flexible Grouping
- Small Group Instruction
- Peer Buddies
- Math Tutoring Center (HS only)
- Math Lab/Tutorial



- MobyMax
- LinkIt!
- Rocket Math
- [Intervention Central](#)
- [Do to Learn](#)
- [Learning Ally](#)
- [Differentiation Strategies for Math](#)
- [Discovery Education Math](#)
- [Everyday Mathematics](#)
- [Homework Spot](#)
- [Flash Card Math](#)
- [Math Fact Fluency](#)

**Tier II:**

- Lesson Tutorials
- Basic Skills Handbook
- Skills Review Handbook
- Differentiated Instruction Big Ideas resources
- Game Closet
- Centers/Small Group Instruction
- Math Tutoring Center (HS only)
- Math Lab/Tutorial
- MobyMax
- LinkIt!
- Math Fact Fluency/Rocket Math

**Tier III:**

- Customized Learning Intervention Activities resources
- Intensive Intervention resource
- Systematic Assessments to focus on specific deficits

**ELL:**

- Big Ideas Math Student Editions are available online in Spanish
- Letters to Parents are available in the Resources by Chapter book to assist in guiding parents through each chapter and offer helpful suggestions they can use to demonstrate mathematical concepts for their child in daily activities. These letters are editable so teachers can customize them.
- Student Dynamic eBook Audio has the option to be read in English or Spanish
- Multi-Language Glossary for new Math vocabulary is available in 14 different languages.
- Audio version is available in English or Spanish.

- Game Closet can be accessed in English or Spanish, while also allowing for all students to play and understand these educational games.
- ELL Notes included in Teacher Edition to help teachers overcome obstacles.
- Record & Practice Journal available in Spanish.
- Student Journal available in Spanish.
- Chapter Reviews available in English and Spanish.
- Vocabulary Flash Cards
- Chunking Information
- Math Word Wall/Word Bank
- Multi-Sensory Instruction
- Use of Translation software
- Gradual Release Model
- [TODOS: Mathematics for ALL](#) - Excellence and Equity in Mathematics
- [FABRIC - A Learning Paradigm for ELLs](#) (NJDOE resource)

**SPED:**

This course of instruction shall be modified through varying techniques, strategies, materials, etc. to meet the needs of all students, including, but not limited to, special education, E.S.L. and basic skills.

- Menu Math (mostly for very low functioning students)
- Administer assessments in separate room in small groups, or individually. Use of resource room and supplemental.
- Specialized seating. Seat student where it would best fit needs. Example in front of board , next to teacher, or under certain lighting.
- Math Labs/Tutorial
- MobyMax
- LinkIt!
- IXL
- Learning Ally (audio version for textbooks and other published materials) – Also available for 504 students
- Apex Online Learning – Bridge students only
- Use of specialized equipment such as beeping balls, special lighting, text to speech and speech to text software, special seats or desks
- Use of hands-on materials for problem solving
- Visual supports and Use of Manipulatives
- Extended time to complete tests and assignments as needed.
- Terminating a section of the test when a student has indicated that he/she has completed all the items he/she can. The examiner must ensure that the student has attempted all items in a section since items are not ordered by difficulty. When this accommodation is used, the test must be administered in a small group or individually to avoid distraction.
- Providing frequent breaks
- Graphic Organizers/Study Guides
- Mnemonic tricks to improve memory
- Reducing workload

- Adjusting accountability for standards by focusing only on essential standards
- Use of iPads or laptops for students with motor issues that make writing difficult
- Use of tangible rewards (certificates, small toys, etc. per behavior plan)
- Use prompts and model directions
- Use task analysis to break down activities and lessons into each individual step needed to complete the task
- Use concrete examples to teach concepts
- Have student repeat/rephrase written directions
- Provide multi-sensory, hands-on materials for instruction
- Chunking Information
- Modify all fine motor tasks for example: (fat crayons, pencil grip, adaptive scissors)
- Functional or practical emphasis
- Test Material modification. Large print versions, recorded versions, or braille.

Test Procedures. Read directions aloud and explain. reading test items aloud (do not read aloud or sign the reading passages in Language Arts Literacy –the reading items may be read or signed); ONLY the teacher who must read the test items aloud or sign is permitted to have a test booklet assigned to him/her for this task. Providing and ensuring that amplification (hearing aid and/or FM system) is in working order. Using a sign language or cued speech interpreter to sign or cue the directions or test items but NOT the reading passages. Masking a portion of the test booklet and/or answer folder to eliminate visual distractors or providing reading windows. Providing written directions on a separate sheet or transparency. . using an examiner who is familiar with the student. Providing manipulatives for math items e.g., number line, counting chips.

Response Modifications. having an examiner record the student’s identification information on the test booklet and/or answer folder. Dictating oral responses to a scribe (examiner or proctor who writes from dictation) using a Braille writer to record responses. Signing responses to a sign language interpreter (student must indicate all punctuation and must spell all keywords). Recording responses on a word processor (all editorial functions MUST be disabled). Providing an augmentative communication device. Using a larger diameter or modified special grip # 2 pencil. Circling answers in the test booklet. Allowing separate additional continuation pages for writing tasks

**504:**

General program accommodations/adjustments or services are always made on a case-by-case basis and individualized. Accommodations are to be reasonable and are intended to provide persons with disabilities compensation for their functional limitation(s) due to a mental or physical impairment. Where Section 504 is concerned, accommodations are made to bring a student with a disability to the same starting point as a non-disabled student. Consequently, the accommodations defined in a Section 504 plan are those interventions that are not typically available to all students.

Environmental Strategies

- Provide a structured learning environment
- Make separate "space" for different types of tasks
- Possible adapting of non-academic times such as lunch, recess, and physical education
- Change student seating
- Utilize a study carrel
- Alter location or personal or classroom supplies for easier access or to minimize distraction
- Provide sensory breaks

- Provide a written or picture schedule

#### Organizational Strategies

- Model and reinforce organizational systems (i.e. color-coding)
- Write out homework assignments, check student's recording of assignments
- Tailor homework assignments toward student strengths
- Set time expectations for assignments
- Provide clues such as clock faces indicating beginning and ending times
- Teach study/organizational skills
- Schedule before or after school tutoring/homework assistance

#### Behavioral Strategies

- Use behavioral management techniques consistently within a classroom and across classes
- Implement behavioral/academic contracts
- Utilize positive verbal and/or nonverbal reinforcements
- Utilize logical consequences
- Confer with the student's parents (and student as appropriate)
- Establish a home/school communication system for behavior monitoring
- Post rules and consequences for classroom behavior
- Put student on daily/weekly progress report/contract
- Reinforce self-monitoring and self-recording of behaviors

#### Presentation Strategies

- Tape lessons so the student can listen to them again; allow students to tape lessons
- Use computer-aided instruction and other audiovisual equipment
- Select alternative textbooks, workbooks, or provide books on tape
- Highlight main ideas and supporting details in the book
- Provide copied material for extra practice (i.e. outlines, study guides)
- Prioritize drill and practice activities for relevance
- Vary the method of lesson presentation using multi-sensory techniques:
  - a) lecture plus overhead/board demonstration support
  - b) small groups required to produce a written product
  - c) large groups required to demonstrate a process
  - d) computer-assisted instruction
  - e) peer tutors or cross-age tutors
  - f) demonstrations, simulations

g) experiments

h) games

- Ask student to repeat/paraphrase context to check understanding
- Arrange for a mentor to work with student in his or her interest area or area of greatest strength
- Provide peer tutoring
- Simplify and repeat instructions about in-class and homework assignments
- Vary instructional pace
- Reinforce the use of compensatory strategies, i.e. pencil grip, mnemonic devices, “spell check”
- Vary kind of instructional materials used
- Assess whether student has the necessary prerequisite skills. Determine whether materials are appropriate to the student's current functioning levels
- Reinforce study skill strategies (survey, read, recite, review)
- Introduce definition of new terms/vocabulary and review to check for understanding
- Be aware of student's preferred learning style and provide matching instruction materials
- Pre-teach and/or re-teach important concepts • Prepare advanced organizers/study guides for new material

Assignments

- Modify the amount of homework
- Use written directions to supplement oral directions
- Reduce paper and pencil tasks
- Allow for assignments to be word processed
- Lower reading level of assignments
- Break assignments into a series of smaller assignments
- Use highlighted texts

Evaluation Methods

- Limit amount of material presented on a single page
- Provide a sample or practice test
- Provide for oral testing
- Provide tests in segments so that student hands in one segment before receiving the next part
- Provide personal copy of test tools and allow for color-coding/highlighting
- Adjust time for completion
- Modify weights of tests when grading