

Quinton Township School District
Algebra/Mathematics
Grade 8
Pacing Chart/Curriculum MAP

Marking Period:	1	Unit Title:	Solving Linear Equations	Pacing:	12 days
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Unit Summary: This unit will focus on linear equations and solving for a variable. Students will use their knowledge of inverse properties to solve simple and multi-step equations. Equations with variables on either side will be a topic of study. The concept of absolute value will be applied to linear equations and the process of solving them will be discussed.

Objectives: Students will be able to:

- Write and solve simple equations.
- Write and solve multi-step equations.
- Write and solve equations with variables on both sides of the equal sign.
- Write and solve absolute value equations.
- Rewrite equations to solve for one variable in terms of the other variable(s).
- Solve real-life problems.

Essential Questions:

- How can you use inductive reasoning to discover rules in mathematics?
- How can you solve a multi-step equation and check the reasonableness of your solution?
- How can you solve an equation that has variables on both sides?
- How can you use a formula for one measurement to write a formula for a different measurement?

Common Core State Standards/Learning Targets:

HSN.Q.1 Use units as a way to understand problems and to guide the solution of multistep problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays.

HSN.Q.2 Define appropriate quantities for the purpose of descriptive modeling.

HSA.REI.1 Explain each step in solving a simple equation. Construct a viable argument to justify a solution method.

A.CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

A.REI.3 Solve linear equations in one variable, including equations with coefficients represented by letters.

A.CED.1 Create equations and inequalities in one variable and use them to solve problems.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Real World Application Problems, Career Integration, Geography, Social Studies/Government, and Science

1.1-real world applications-running in a 200 meter dash example, temperature change example, 1.2-career integration- firefighter example: relating distance and water pressure, 1.3-Geography-boat traveling in New Orleans upstream and downstream on the

Mississippi River, 1.4-real world application-cheerleading competition example, Social Studies/Government-Election results example p.34 problem 60, 1.5-Science-Formula for temperature comparing surface temperatures of Mercury and Venus.

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
<ul style="list-style-type: none"> ● 1.1 Solving Simple Equations ● 1.2 Solving Multi-Step Equations ● 1.3 Solving Equations with Variables on Both Sides ● 1.4 Solving Absolute Value Equations ● 1.5 Rewriting Equations and Formulas 	Curriculum Map / Decisions of Math Big Ideas Math Teachers Guide p.1-39 Big Ideas website Desmos.com IXL	Student Textbook p.1-39 Record and Practice Journal p. 1-20 TI-84 graphing calculators	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos ● IXL:J.3-5, J.6, J.9 and L.1-2

Formative Assessment Plan	Summative Assessment Plan
<i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i>	<i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i>

<p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p>Final Assessment/Benchmark/Project: 1.1-1.2 Quiz 1.3-1.4 Quiz Chapter 1 Test Fall MAP Benchmark Assessment</p> <p>Suggested skills to be assessed: <i>Write and solve simple equations. Write and solve multi-step equations. Write and solve equations with variables on both sides of the equal sign. Write and solve absolute value equations. Rewrite equations to solve for one variable in terms of the other variable(s). Solve real-life problems.</i></p>
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Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing

<p>components</p> <ul style="list-style-type: none"> • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students to assist with task, so that all are aware of expectations. • Create modified assessments. • Allow students to utilize online books, when available, to listen to oral recorded reading. • Provide individualized assistance as necessary. • Allow for group work (strategically selected) and collaboration as necessary. • Utilize homework recorder within SIS. • Allow for copies of notes to be shared out. • Utilize assistive technology as appropriate. • Provide meaningful feedback and utilize teachable moments. • Utilize graphic organizers • Introduce/review study skills 	<p>to drive instruction</p> <ul style="list-style-type: none"> • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<p>encourage good behavior and completion of work.</p> <ul style="list-style-type: none"> • Establish a consistent and daily routine. 	<p>in an open world.</p> <ul style="list-style-type: none"> • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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- Provide reading material at or slightly above students' reading levels.
- Utilize manipulatives as necessary.
- Utilize auditory reminders as deemed necessary.
- Provide breaks to allow for refocusing as necessary.
- Establish a consistent and daily routine.



Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	1	Unit Title:	Solving Linear Inequalities	Pacing:	12 days
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Unit Summary: This unit focuses on how to use properties of operations to generate equivalent inequalities. Students will solve real-life and mathematical problems using inequalities.

Objectives: Students will be able to:

- Write and graph inequalities.
- Write and solve inequalities using addition or subtraction.
- Solve inequalities using multiplication or division.
- Write and solve multi-step inequalities.
- Solve real-life problems.
- Graph linear inequalities in two variables

Essential Questions:

- How can you use an inequality to describe a real life statement?
- How can you use addition and subtraction to solve an inequality?
- How can you use multiplication and division to solve an inequality?
- How can you use an inequality to describe the area and perimeter of a composite figure?
- How can you use a coordinate plane to solve problems involving linear inequalities?

Common Core State Standards/Learning Targets:

N.Q.2 Define appropriate quantities for the purpose of descriptive modeling.

A.CED.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

A.CED.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. For example, represent inequalities describing nutritional and cost constraints on combinations of different foods.

A.REI.2 Solve simple rational and radical equations in one variable, and give examples showing how extraneous solutions may arise.

A.REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Geography, Science, Art, Real world application, Career connection, Animal Science

2.1-Geography-Xianren Bridge natural arch problem, 2.2-Science-Microwave electricity problem, 2.3-Art/Real world application-digital camera problem,2.4-career connection-distance a fire truck ladder can reach problem,2.5-Science/Botany-Mountain plant life problem, 2.6-Animal Science-Camel physiology problem.

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
<p>2.1 Writing and Graphing Inequalities 2.2 Solving Inequalities Using Addition or Subtraction 2.3 Solving Inequalities Using Multiplication or Division 2.4 Solving Multi-Step Inequalities 2.5 Solving Compound Inequalities 2.6 Solving Absolute Value Inequalities</p>	<p>Curriculum Map/ Decisions of Teacher's Guide p. 40-98 Big Ideas website Desmos.com IXL</p>	<p>Student Edition p. 40-98 Record and Practice Journal pg 21-57 TI-84 graphing calculators</p>	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos ● IXL:A1.S.1-3 A1.S.5-8 A1.S.11-12 A1.S.14-15 A1.S.16-18 A1.S.20, 23, 24

Formative Assessment Plan	Summative Assessment Plan
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Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.

Suggested activities to assess student progress:

- Weekly Homework Completion
- Classwork & Basic Skill Practice
- Corrections & Reflections
- Kahoot!
- Quizizz
- Desmos
- Big Ideas math online assessment tools
- Rubric-for projects
- Self-reflection

Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.

Final Assessment/Benchmark/Project:

- 2.1-2.4 Quiz
- Chapter 2 Test

Suggested skills to be assessed:

.Write and graph inequalities. Write and solve inequalities using addition or subtraction. Solve inequalities using multiplication or division. Write and solve multi-step inequalities. Solve real-life problems. Graph linear inequalities in two variables

Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive

<p>clearly and concisely and repeat, reword, modify as necessary.</p> <ul style="list-style-type: none"> • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students to assist with task, so that all are aware of expectations. • Create modified assessments. • Allow students to utilize online books, when available, to listen to oral recorded reading. • Provide individualized assistance as necessary. • Allow for group work (strategically selected) and collaboration as necessary. • Utilize homework recorder within SIS. • Allow for copies of notes to 	<ul style="list-style-type: none"> • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<p>thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge.</p> <ul style="list-style-type: none"> • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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<p>be shared out.</p> <ul style="list-style-type: none">• Utilize assistive technology as appropriate.• Provide meaningful feedback and utilize teachable moments.• Utilize graphic organizers• Introduce/review study skills• Provide reading material at or slightly above students' reading levels.• Utilize manipulatives as necessary.• Establish a consistent and daily routine.			
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Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	1-2	Unit Title:	Graphing and Writing Linear Equations	Pacing:	25 days
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Unit Summary: This unit will have students apply and extend previous understandings of equations in order to graph and write linear equations.

Objectives: Students will be able to:

- Understand that lines represent solutions of linear equations.
- Graph linear equations.
- Find slopes of lines using two points.
- Find slopes of lines from tables.
- Find slopes and y-intercepts of graphs of linear equations.
- Graph linear equations written in slope-intercept form.
- Graph linear equations written in standard form.
- Write equations of lines in slope-intercept form.
- Write equations of lines using slope and a point.
- Write equations of lines using two points.
- Solve real-life problems involving linear equations.
- Use linear equations to solve real-life problems.
- Identify and write equations of parallel lines.

- Identify and write equations of perpendicular lines.
- Use parallel and perpendicular lines in real-life problems.
- Interpret scatter plots.
- Identify correlations between data sets.
- Use lines of fit to model data.
- Use residuals to determine how well lines of fit model data.
- Use technology to find lines of best fit.
- Distinguish between correlation and causation.
- Write the terms of arithmetic sequences.
- Graph arithmetic sequences.
- Write arithmetic sequences as functions.
- Evaluate piecewise functions.
- Graph and write piecewise functions.
- Graph and write step functions.
- Write absolute value functions.

Essential Questions:

- How can you recognize a linear equation? How can you draw its graph?
- How can the slope of a line be used to describe the line?
- How can you describe the graph of the equation $y = mx + b$?
- How can you describe the graph of the equation $ax + by = c$?
- How can you write an equation of a line when you are given the slope and y-intercept of the line?
- How can you write an equation of a line when you are given the slope and a point on a line?
- How can you use a linear equation in two variables to model and solve a real-life problem?
- Given the graph of a linear function, how can you write an equation of the line?
- How can you write an equation of a line when you are given the slope and a point on the line?
- How can you recognize lines that are parallel or perpendicular?
- How can you use a scatter plot and a line of fit to make conclusions about data?

- How can you analytically find a line of best fit for a scatter plot?
- How can you use an arithmetic sequence to describe a pattern?
- How can you describe a function that is represented by more than one equation?

Common Core State Standards/Learning Targets:

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

A.CED.3 Represent constraints by equations . . . and interpret solutions as viable or nonviable options in a modeling context.

A.REI.10 Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line).

F.IF.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

F.IF.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.2.8.B.3: Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1: Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Real world application problems, Science, Career application, and Geography

3.1-Real world application-Taxi ride problem, 3.2-Real world application-two people bidding on coins at an auction problem, 3.3-Science-Speed of light problem,3.4-Real world application-Basketball problem, 3.5-Real world application-Submarine problem, 3.6-Career application-Corey’s Catering problem, 3.7- real world application-computer game problem., 4.1-Science-Renewable energy problem, 4.2-Real world application-School spirit problem, 4.3-Career application/real world application-helicopter rescue problem,4.4-Real world application-Calories related to sugar smoothy problem, 4.5-History/Geography-Old Faithful Geyser problem, 4.6-Real world application-Movie release income problem, 4.7-Real world application-Karaoke machine problem

Overview of Activities	Teacher’s Guide/ Resources	Core Instructional Materials	Technology Infusion
<ul style="list-style-type: none"> ● 3.1 Functions ● 3.2 Linear Functions ● 3.3 Function Notation ● 3.4 Graphing Linear Equations in Standard Form ● 3.5 Graphing Linear Equations in Slope-Intercept Form ● 3.6 Transformations of Graphs of Linear Functions ● 3.7 Graphing Absolute Value Functions ● 4.1 Writing Equations in Slope-Intercept Form ● 4.2 Writing Equations in 	<p>Curriculum Map/ Decisions of Big Ideas Math Teacher’s Guide pg.103-231 Big Ideas website Desmos.com IXL</p>	<p>Student Edition p. 101-230 Record and Practice Journal pg 58-130 TI-84 graphing calculators</p>	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos ● IXL:T.1-4, K.1-2, K.4-6, K.8-10, K.12,14 U.1-3, U.5, U.8-11, U.14, U.15

<p>Point-Slope Form</p> <ul style="list-style-type: none"> ● 4.3 Writing Equations of Parallel and Perpendicular Lines ● 4.4 Scatter Plots and Lines of Fit ● 4.5 Analyzing Lines of Fit ● 4.6 Arithmetic Sequences ● 4.7 Piecewise Functions 			
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Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: 3.1-3.3 Quiz Chapter 3 Test 4.1-4.3 Quiz Chapter 4 test</p> <p>Suggested skills to be assessed:</p>

<p>Rubric-for projects Self-reflection</p>	<p><i>Understand that lines represent solutions of linear equations. Graph linear equations. Find slopes of lines using two points. Find slopes of lines from tables. Find slopes and y-intercepts of graphs of linear equations. Graph linear equations written in slope-intercept form. Graph linear equations written in standard form. Write equations of lines in slope-intercept form. Write equations of lines using slope and a point. Write equations of lines using two points. Solve real-life problems involving linear equations.</i></p>
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Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world.

<ul style="list-style-type: none"> ● Provide step by step instructions ● Model and use visuals as often as possible ● Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. ● Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. ● Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. ● Create rubrics/allow students to assist with task, so that all are aware of expectations. ● Create modified assessments. ● Allow students to utilize online books, when available, to listen to oral recorded reading. ● Provide individualized assistance as necessary. ● Allow for group work (strategically selected) and collaboration as necessary. ● Utilize homework recorder within SIS. ● Allow for copies of notes to be shared out. ● Utilize assistive technology as appropriate. ● Provide meaningful feedback and utilize teachable moments. ● Utilize graphic organizers ● Introduce/review study skills ● Provide reading material at or 	<p>native language</p> <ul style="list-style-type: none"> ● Hold conferences with translator present ● Utilize additional NJDOE resources/recommendations ● Review Special Education listing for additional recommendations ● Establish a consistent and daily routine 	<p>daily routine.</p>	<ul style="list-style-type: none"> ● Encourage exposure to, selection and use of appropriate and specialized resources. ● Promote self-initiated and self-directed learning and growth. ● Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. ● Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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<p>slightly above students' reading levels.</p> <ul style="list-style-type: none">• Utilize manipulatives as necessary.• Establish a consistent and daily routine			
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Quinton Township School District
Algebra/Mathematics
Grade 8
Pacing Chart/Curriculum MAP

Marking Period:	2	Unit Title:	Solving Systems of Linear Equations	Pacing:	18 days
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Unit Summary: This unit focuses on solving systems of equations. Students will solve systems of equations using three different techniques.

Objectives: Students will be able to:

- Write and solve systems of linear equations by graphing.
- Write and solve systems of linear equations by substitution.
- Write and solve systems of linear equations by elimination.
- Solve systems of linear equations having no solution or infinitely many solutions.
- Solve linear equations by graphing a system of linear equations.
- Write and graph systems of linear inequalities in two variables.
- Solve real-life problems.

Essential Questions:

- How can you solve a system of linear equations?
- How can you use substitution to solve a system of linear equations?
- How can you use elimination to solve a system of linear equations?
- Can a system of linear equations have no solution? Can a system of linear equations have many solutions?

- How can you sketch a graph of a system of linear inequalities?

Common Core State Standards/Learning Targets:

HSA-REI.C.6 Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables.

HSA-CED-A.3 Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.

HSA-REI-C.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

HSA-REI.D.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

HSA-REI-D.12 Graph the solutions to a linear inequality in two variables as a half-plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Career connection, Real world application, Drama, Animal Science

5.1-Career connection-Roofing contractor problem, 5.2-Drama/Real world application-Drama club problem, 5.3-Real world application-Delivery van problem, 5.4-Real world application-comparing two plots of land problem, 5.5-Animal Science- age rate of animal comparison problem, 5.6-Career application-carpenter lumber problem, 5.7-Animal Science-Surfperch fish and rockfish problem

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
<p>5.1 Solving Systems of Linear Equations by Graphing</p> <p>5.2 Solving Systems of Linear Equations by Substitution</p> <p>5.3 Solving Systems of Linear Equations by Elimination</p> <p>5.4 Solving Special Systems of Linear Equations</p> <p>5.5 Solving Equations by Graphing</p> <p>5.6 Graphing Linear Inequalities in Two Variables</p> <p>5.7 Systems of Linear Inequalities</p>	<p>Curriculum Map/ Decisions of Big Ideas Math Teachers Guide 232-287</p> <p>Big Ideas website</p> <p>Desmos.com</p> <p>IXL</p>	<p>Student Textbook pg. 233-286</p> <p>Record and Practice Journal pg. 131-166 TI-84</p> <p>graphing calculators</p>	<ul style="list-style-type: none">● Smart Board Applications● Google Applications● Big ideas math website-student assignments● Desmos● IXL: Q.1-7, 10, 11

Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz 5.1-5.4 Chapter 5 Test Systems pictures to represent variables project</p> <p>Suggested skills to be assessed: Write and solve systems of linear equations by graphing. Write and solve systems of linear equations by substitution. Write and solve systems of linear equations by elimination. Solve systems of linear equations having no solution or infinitely many solutions. Solve linear equations by graphing a system of linear equations. Write and graph systems of linear inequalities in two variables. Solve real-life problems.</p>

Differentiation

Special Education	ELL	At Risk	Gifted and Talented
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<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students to assist with task, so that all are aware of expectations. • Create modified assessments. • Allow students to utilize online books, when available, to listen to oral recorded 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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<p>reading.</p> <ul style="list-style-type: none">• Provide individualized assistance as necessary.• Allow for group work (strategically selected) and collaboration as necessary.• Utilize homework recorder within SIS.• Allow for copies of notes to be shared out.• Utilize assistive technology as appropriate.• Provide meaningful feedback and utilize teachable moments.• Utilize graphic organizers• Introduce/review study skills• Provide reading material at or slightly above students' reading levels.• Utilize manipulatives as necessary.• Establish a consistent and daily routine			
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Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	2	Unit Title:	Exponential Equations and Functions	Pacing:	18 days
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Unit Summary: This unit focuses on exponential relationships. Students will recall information about simplifying expressions to help simplify radical expressions and square roots. Multiple activities with exponential equations such as graphing, writing and interpreting functions will be explored. Geometric and recursive sequences will be created given real life scenarios.

Objectives: Students will be able to:

- Simplify and evaluate square roots.
- Simplify radical expressions.
- Determine whether sums or products are rational or irrational.
- Simplify expressions using the properties of exponents.
- Simplify expressions with rational exponents.
- Identify, evaluate, and graph exponential functions.
- Solve exponential equations algebraically and graphically.
- Write, interpret, and graph exponential functions.
- Identify exponential growth and decay.
- Write, interpret, and graph exponential decay functions.
- Extend and graph geometric sequences.

- Write equations for geometric sequences.
- Solve real-life problems.
- Write the terms of recursively defined sequences.
- Write recursive equations for sequences

Essential Questions:

- How can you multiply and divide square roots?
- How can you use inductive reasoning to observe patterns and write general rules involving properties of exponents?
- How can you write and evaluate an n th root of a number?
- What are the characteristics of an exponential function?
- What are the characteristics of exponential growth?
- What are the characteristics of exponential decay?
- How are geometric sequences used to describe patterns?

Common Core State Standards/Learning Targets:

HSN-RN.A.1 Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents

HSN-RN.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

HSA-CED.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

HSF-IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

HSF-IF.C.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.

HSF-IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

HSF-BF.A.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.

HSF-BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(ox)$, and $f(x + k)$ for specific values of k (both

positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

HSF-LE.A.1a Distinguish between situations that can be modeled with linear functions and with exponential functions.

HSF.LE.A.2 Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table).

HSA.SSE.B.3c Use the properties of exponents to transform expressions for exponential functions.

HSF-BF.A.1c Compose functions

HSA-CED.A.1 Create equations and inequalities in one variable and use them to solve problems.

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

HSA-REI.D.11 Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

HSF-IF.A.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.

HSF-BF.A.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being
 CRP4 Communicate clearly and effectively and with reason
 CRP6 Demonstrate creativity and innovation
 CRP8 Utilize critical thinking to make sense of problems and persevere in solving them
 CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Science, Animal Science, Art, Real world applications

6.1-Animal science-jellyfish emitting light problem, Science-Microscope magnification problem, Science-Solar system problem, Science-Diffusion problem. 6.2-Real world application-beach ball problem, 6.3-Animal science-Coyote population problem,6.4-Science-Plutonium decay problem, 6.5-Science-Bacterial culture problem, 6.6-Real world application-Soup kitchen problem, 6.7-Art/History- Fibonacci and flowers problem

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
<p>6.1 Properties of Exponents 6.2 Radicals and Rational Exponents 6.3 Exponential Functions 6.4 Exponential Growth and Decay 6.5 Solving Exponential Equations 6.6 Geometric Sequences 6.7 Recursively Defined Sequences</p>	<p>Curriculum Map/ Decisions of Big Ideas Math Teachers Guide p.288-353 Big Ideas website Desmos.com IXL</p>	<p>Student Textbook pg. 289-352 Record and Practice Journal pg. 167-202</p>	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos ● IXL: EE.1-3 & 6, V.3, 7-10

Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz 6.1-6.4 Test Chapter 6</p> <p>Suggested skills to be assessed: <i>Simplify and evaluate square roots.Simplify radical expressions. Determine whether sums or products are rational or irrational. Simplify expressions using the properties of exponents.Simplify expressions with rational exponents. Identify, evaluate, and graph exponential functions.Solve exponential equations algebraically and graphically. Write, interpret, and graph exponential functions. Identify exponential growth and decay. Write, interpret, and graph exponential decay functions. Extend and graph geometric sequences. Write equations for geometric sequences. Solve real-life problems. Write the terms of recursively defined sequences. Write recursive equations for sequences.</i></p>

Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).

<p>to assist with task, so that all are aware of expectations.</p> <ul style="list-style-type: none">• Create modified assessments.• Allow students to utilize online books, when available, to listen to oral recorded reading.• Provide individualized assistance as necessary.• Allow for group work (strategically selected) and collaboration as necessary.• Utilize homework recorder within SIS.• Allow for copies of notes to be shared out.• Utilize assistive technology as appropriate.• Provide meaningful feedback and utilize teachable moments.• Utilize graphic organizers• Introduce/review study skills• Provide reading material at or slightly above students' reading levels.• Utilize manipulatives as necessary.• Establish a consistent and daily routine			
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Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	2	Unit Title:	Polynomial Equations and Factoring	Pacing:	18 days
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Unit Summary: This unit focuses on classifying and simplifying polynomials, as well as, factoring quadratic functions and polynomials. Students will add, subtract, and multiply polynomials. Students will investigate special products of polynomials. Students will investigate the graphical representations of polynomial equations to make conjectures about the relationships between the solutions, the form of the equations, and the graphs. Students will expand expressions using prime factorization to determine and factor out greatest common factors (GCFs). Students will multiply binomials using multiple methods to make conjectures about the relationship of a trinomial's factors and the values of b and c. Students will use multiple strategies to factor special products. They will use grouping to factor polynomials with four terms into the product of a quadratic and a linear factor.

Objectives: Students will be able to:

- Find the degrees of monomials.
- Classify polynomials.
- Add and subtract polynomials.
- Solve real-life problems. Multiply binomials.
- Use the FOIL method. Multiply binomials and trinomials.
- Use the square of a binomial pattern.
- Use the sum and difference pattern.

- Use special product patterns to solve real-life problems.
- Use the Zero-Product Property. Factor polynomials using the GCF.
- Use the Zero-Product Property to solve real-life problems.
- Factor $x^2 + bx + c$.
- Factor $ax^2 + bx + c$.
- Factor the difference of two squares.
- Factor perfect square trinomials.
- Factor polynomials by grouping.
- Factor polynomials completely.
- Use factoring to solve real-life problems.

Essential Questions:

- How can you add and subtract polynomials?
- How can you multiply two polynomials?
- What are the patterns in the special products $(a + b)(a - b)$, $(a + b)^2$, and $(a - b)^2$?
- How can you solve a polynomial equation?
- How can you use algebra tiles to factor the trinomial $x^2 + bx + c$ into the product of two binomials?
- How can you use algebra tiles to factor the trinomial $ax^2 + bx + c$ into the product of two binomials?
- How can you recognize and factor special products?
- How can you factor a polynomial completely?

Common Core State Standards/Learning Targets:

HSA-APR.A.1 Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

HSA-APR-B.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

HSA-REI.B.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic

formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .

HSA-SSE.A.2 Use the structure of an expression to identify ways to rewrite it. For example, see $x^4 - y^4$ as $(x^2)^2 - (y^2)^2$, thus recognizing it as a difference of squares that can be factored as $(x^2 - y^2)(x^2 + y^2)$.

HSA-SSE.B.3a Factor a quadratic expression to reveal the zeros of the function it defines.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.2.8.B.3: Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1: Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Science/Physics, Real world application, Geography/Engineering, Art, Science/Gravity

7.1-Science/Physics-Velocity water balloon dropped from a building problem, 7.2- Real world application-Framing a photo problem, 7.3, 7.4-Geography/Engineering-Gateway Arch problem, 7.5-Art-Photo cropping problem, 7.6-Real world application-Giraffe game reserve problem, 7.7-Science/Gravity-height of a falling object problem, 7.8- Real world application-finding measurements of a terrarium problem.

Overview of Activities

Teacher's Guide/ Resources

Core Instructional

Technology Infusion

		Materials	
<p>7.1 Adding and Subtracting Polynomials</p> <p>7.2 Multiplying Polynomials</p> <p>7.3 Special Products of Polynomials</p> <p>7.4 Solving Polynomial Equations in Factored Form</p> <p>7.5 Factoring $x^2 + bx + c$</p> <p>7.6 Factoring $ax^2 + bx + c$</p> <p>7.7 Factoring Special Products</p> <p>7.8 Factoring Polynomials Completely</p>	<p>Curriculum map/Reference Big Ideas Math Teachers Guide p.354-415</p> <p>Big Ideas website</p> <p>Teacher Desmos</p> <p>IXL</p>	<p>Big Ideas Math book pg. 355-414</p> <p>Record and Practice Journal pg. 203-243</p> <p>TI-84 graphing calculators</p>	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos ● IXL:Z.1, Z.4-6, Z.8-10, AA.1-2,4-6

Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz chapter 7.1 to 7.4 Chapter 7 Test Winter MAP Benchmark Assessment</p> <p>Suggested skills to be assessed:</p>

<p>Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p><i>Find the degrees of monomials. Classify polynomials. Add and subtract polynomials. Solve real-life problems. Multiply binomials. Use the FOIL method. Multiply binomials and trinomials. Use the square of a binomial pattern. Use the sum and difference pattern. Use special product patterns to solve real-life problems. Use the Zero-Product Property. Factor polynomials using the GCF. Use the Zero-Product Property to solve real-life problems. Factor $x^2 + bx + c$. Factor $ax^2 + bx + c$. Factor the difference of two squares. Factor perfect square trinomials. Factor polynomials by grouping. Factor polynomials completely. Use factoring to solve real-life problems.</i></p>
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Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information

<ul style="list-style-type: none"> ● Chunk tasks into smaller components ● Provide step by step instructions ● Model and use visuals as often as possible ● Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. ● Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. ● Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. ● Create rubrics/allow students to assist with task, so that all are aware of expectations. ● Create modified assessments. ● Allow students to utilize online books, when available, to listen to oral recorded reading. ● Provide individualized assistance as necessary. ● Allow for group work (strategically selected) and collaboration as necessary. ● Utilize homework recorder within SIS. ● Allow for copies of notes to be shared out. ● Utilize assistive technology as appropriate. ● Provide meaningful feedback and utilize teachable moments. ● Utilize graphic organizers 	<p>to drive instruction</p> <ul style="list-style-type: none"> ● Translate printed communications for parents in native language ● Hold conferences with translator present ● Utilize additional NJDOE resources/recommendations ● Review Special Education listing for additional recommendations ● Establish a consistent and daily routine 	<p>encourage good behavior and completion of work.</p> <ul style="list-style-type: none"> ● Establish a consistent and daily routine. 	<p>and develop the attitude that knowledge is worth pursuing in an open world.</p> <ul style="list-style-type: none"> ● Encourage exposure to, selection and use of appropriate and specialized resources. ● Promote self-initiated and self-directed learning and growth. ● Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. ● Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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- **Introduce/review study skills**
- **Provide reading material at or slightly above students' reading levels.**
- **Utilize manipulatives as necessary.**
- **Establish a consistent and daily routine**



Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	3	Unit Title:	Graphing Quadratic Functions	Pacing:	18 days
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Unit Summary: This unit focuses on graphing quadratic functions. A parent function will be identified and transformations based on changes to the parent function will create rules used to generate graphs of quadratic equations in many forms. Minima, maxima, domain and range will be identified throughout the unit. Zeros for the functions will be identified and will play a larger role in the next chapter when discussing solutions to quadratic equations.

Objectives: Students will be able to:

- Identify characteristics of quadratic functions.
- Graph and use quadratic functions of the form of $f(x) = ax^2$.
- Graph quadratic functions of the form $f(x) = ax^2 + c$. Solve real-life problems involving functions of the form $f(x) = ax^2 + c$.
- Graph quadratic functions of the form $f(x) = ax^2 + bx + c$.
- Find maximum and minimum values of quadratic functions.
- Identify even and odd functions. Graph quadratic functions of the form $f(x) = a(x - h)^2$.
- Graph quadratic functions of the form $f(x) = a(x - h)^2 + k$.
- Model real-life problems using $f(x) = a(x - h)^2 + k$.
- Graph quadratic functions of the form $f(x) = a(x - p)(x - q)$.
- Use intercept form to find zeros of functions.
- Use characteristics to graph and write quadratic equations.

- Use characteristics to graph and write cubic functions.
- Choose functions to model data.
- Write functions to model data.
- Compare functions using average rates of change.
- Solve real-life problems involving different function types.

Essential Questions:

- What are some of the characteristics of the graph of a quadratic function of the form $f(x) = ax^2$?
- How does the value of c affect the graph of $f(x) = ax^2 + c$?
- How can you find the vertex of the graph of $f(x) = ax^2 + bx + c$?
- How can you describe the graph of $f(x) = a(x - h)^2$?
- What are some of the characteristics of the graph of $f(x) = a(x - p)(x - q)$?
- How can you compare the growth rates of linear, exponential, and quadratic functions?

Common Core State Standards/Learning Targets:

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

HSF-IF.C.7a Graph linear and quadratic functions and show intercepts, maxima, and minima.

HSF-BF.B.3 Identify the effect on the graph of replacing $f(x)$ by $f(x) + k$, $k f(x)$, $f(kx)$, and $f(x + k)$ for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. Include recognizing even and odd functions from their graphs and algebraic expressions for them.

HSF-IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).

HSF-IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

HSF-BF.A.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.

HSA-SSS.B.3a Factor a quadratic expression to reveal the zeros of the function it defines.

HSA-APR.B.3 Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.

HSF-IF.C.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

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

HSF-LE.A.3 Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Geography, Career connection, Real world application

8.1- Real world connection-swirling water in a glass problem,8.2-Real world connection-tranquillity garden waterfall problem, 8.3-Real world connection-Firework explosion problem, Geography-Mackinac Bridge in Michigan problem, 8.4-Real world problem-roller coaster problem, 8.5-Career connection-path of a basketball players shot problem,Real world connection-Satellite

dish problem, 8.6-Town Population problem.

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
<p>8.1 Graphing $f(x) = ax^2$ 8.2 Graphing $f(x) = ax^2 + c$ 8.3 Graphing $f(x) = ax^2 + bx + c$ 8.4 Graphing $f(x) = a(x - h)^2 + k$ 8.5 Using Intercept Form 8.6 Comparing Linear, Exponential, and Quadratic Functions</p>	<p>Curriculum map/Reference Big Ideas Math Teachers Guide p.416-475</p> <p>Big Ideas website</p> <p>Teacher Desmos</p> <p>IXL</p>	<p>Student Edition p. 417-474</p> <p>Record and Practice Journal pg 244-274</p> <p>TI-84 graphing calculators</p>	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos ● IXL: A1.BB.1, 2, 3, 4, 6, 7, 12 CC.1 & 2

Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz 8.1-8.3 Chapter 8 Test</p>

<p>Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p>Angry Birds Project</p> <p>Suggested skills to be assessed: <i>Identify characteristics of quadratic functions. Graph and use quadratic functions of the form of $f(x) = ax^2$. Graph quadratic functions of the form $f(x) = ax^2 + c$. Solve real-life problems involving functions of the form $f(x) = ax^2 + c$. Graph quadratic functions of the form $f(x) = ax^2 + bx + c$. Find maximum and minimum values of quadratic functions. Identify even and odd functions. Graph quadratic functions of the form $f(x) = a(x - h)^2$. Graph quadratic functions of the form $f(x) = a(x - h)^2 + k$. Model real-life problems using $f(x) = a(x - h)^2 + k$. Graph quadratic functions of the form $f(x) = a(x - p)(x - q)$. Use intercept form to find zeros of functions. Use characteristics to graph and write quadratic equations. Use characteristics to graph and write cubic functions. Choose functions to model data. Write functions to model data. Compare functions using average rates of change. Solve real-life problems involving different function types.</i></p>
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Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study

<p>plan</p> <ul style="list-style-type: none"> • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students to assist with task, so that all are aware of expectations. • Create modified assessments. • Allow students to utilize online books, when available, to listen to oral recorded reading. • Provide individualized assistance as necessary. • Allow for group work 	<ul style="list-style-type: none"> • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<p>of major ideas and problems through Compacting.</p> <ul style="list-style-type: none"> • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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<p>(strategically selected) and collaboration as necessary.</p> <ul style="list-style-type: none">• Utilize homework recorder within SIS.• Allow for copies of notes to be shared out.• Utilize assistive technology as appropriate.• Provide meaningful feedback and utilize teachable moments.• Utilize graphic organizers• Introduce/review study skills• Provide reading material at or slightly above students' reading levels.• Utilize manipulatives as necessary.• Establish a consistent and daily routine			
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Quinton Township School District
Algebra/Mathematics
Grade 8
Pacing Chart/Curriculum MAP

Marking Period:	3	Unit Title:	Solving Quadratic Equations	Pacing:	21 days
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Unit Summary: This unit focuses on radicals and on a variety of methods used for solving quadratic equations. Students will use square root and cube root factors to simplify radicals. Previous knowledge of simplifying radicals will be applied in order to multiply and divide simple expressions with radicals. Students will investigate which products produce solutions with no radicals. Students will apply this knowledge to rationalize denominators. Students will investigate a real-world example to find the zeros of a function, and then interpret the zeros in the context of the problem. Then students will explore different ways to find zeros of quadratic functions graphically. Students will relate the zeros to the quadratic functions to learn how to use square roots to solve quadratic equations. Students will apply their knowledge of factoring to complete the square.

Objectives: Students will be able to:

- Use properties of radicals to simplify expressions.
- Simplify expressions by rationalizing the denominator.
- Perform operations with radicals.
- Solve quadratic equations by graphing.
- Use graphs to find and approximate the zeros of functions.
- Solve real-life problems using graphs of quadratic functions.
- Solve quadratic equations using square roots.
- Approximate the solutions of quadratic equations.
- Complete the square for expressions of the form $x^2 + bx$.

- Solve quadratic equations by completing the square.
- Find and use maximum and minimum values.
- Solve real-life problems by completing the square.
- Solve quadratic equations using the Quadratic Formula.
- Interpret the discriminant.
- Choose efficient methods for solving quadratic equations.
- Solve systems of nonlinear equations by graphing.
- Solve systems of nonlinear equations algebraically.
- Approximate solutions of nonlinear systems and equations.

Essential Questions:

- How can you multiply and divide square roots?
- How can you use a graph to solve a quadratic equation in one variable?
- How can you determine the number of solutions of a quadratic equation of the form $ax^2 + c = 0$?
- How can you use “completing the square” to solve a quadratic equation?
- How can you derive a formula that can be used to write the solutions of any quadratic equation in standard form?
- How can you solve a system of two equations when one is linear and the other is quadratic?

Common Core State Standards/Learning Targets:

HSN-RN.A.2 Rewrite expressions involving radicals and rational exponents using the properties of exponents.

HSN-RN.B.3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational.

HSA-REI.D.11 Explain why the x-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions.

HSF-IF.C.7a Graph linear and quadratic functions and show intercepts, maxima, and minima.

HSA-CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

HSA-CED.A.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.

HSA-REI.B.4b Solve quadratic equations by inspection (e.g., for $x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as $a \pm bi$ for real numbers a and b .

HSA-REI.B.4a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x - p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form.

HSF-IF.C.8a Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context.

HSA-SSS.B.3b Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

HSA-REI.C.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. For example, find the points of intersection between the line $y = -3x$ and the circle $x^2 + y^2 = 3$.

HSA-REI.D.11 Explain why the x -coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations. Include cases where $f(x)$ and/or $g(x)$ are linear, polynomial, rational, absolute value, exponential, and logarithmic functions..

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

History, Career connection, Animal Science, Real world application

9.1-History-Parthenon problem, 9.2-Career connection-Football player kick problem, 9.3-Real world connection-creating a Koi pond and finding dimensions problem, 9.4-Real world connection-Snowboarding halfpipe problem, 9.5-Animal Science-Projected jump height of a dolphin problem, 9.6-Real world connection-Driving boats on a lake problem

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
<p>9.1 Properties of Radicals 9.2 Solving Quadratic Equations by Graphing 9.3 Solving Quadratic Equations Using Square Roots 9.4 Solving Quadratic Equations by Completing the Square 9.5 Solving Quadratic Equations Using the Quadratic Formula 9.6 Solving Nonlinear Systems of Equations</p>	<p>Big Ideas Math Teachers Guide p.476-539 Big Ideas website Desmos IXL</p>	<p>Student Edition p. 477-538 Record and Practice Journal pg 275-305 TI-84 graphing calculators</p>	<ul style="list-style-type: none">● Smart Board Applications● Google Applications● Big ideas math website-student assignments● Desmos● IXL: BB.5,7-11, 13

Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz 9.1-9.3 Chapter 9 Test Benchmark Assessment</p> <p>Suggested skills to be assessed: <i>Use properties of radicals to simplify expressions. Simplify expressions by rationalizing the denominator. Perform operations with radicals. Solve quadratic equations by graphing. Use graphs to find and approximate the zeros of functions. Solve real-life problems using graphs of quadratic functions. Solve quadratic equations using square roots. Approximate the solutions of quadratic equations. Complete the square for expressions of the form $x^2 + bx$. Solve quadratic equations by completing the square. Find and use maximum and minimum values. Solve real-life problems by completing the square. Solve quadratic equations using the Quadratic Formula. Interpret the discriminant. Choose efficient methods for solving quadratic equations. Solve systems of nonlinear equations by graphing. Solve systems of nonlinear equations algebraically. Approximate solutions of nonlinear systems and equations.</i></p>

Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).

<p>instructional practices.</p> <ul style="list-style-type: none">• Create rubrics/allow students to assist with task, so that all are aware of expectations.• Create modified assessments.• Allow students to utilize online books, when available, to listen to oral recorded reading.• Provide individualized assistance as necessary.• Allow for group work (strategically selected) and collaboration as necessary.• Utilize homework recorder within SIS.• Allow for copies of notes to be shared out.• Utilize assistive technology as appropriate.• Provide meaningful feedback and utilize teachable moments.• Utilize graphic organizers• Introduce/review study skills• Provide reading material at or slightly above students' reading levels.• Utilize manipulatives as necessary.• Establish a consistent and daily routine			
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Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	3-4	Unit Title:	Radical Functions and Equations	Pacing:	21 days
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Unit Summary: In this unit, students will focus on radical functions involving square-roots and cube-roots. Students will match square root graphs to transformations and then identify the equations for the functions. Students will work collaboratively to describe how different graphs are transformations of the parent function $f(x)=\text{the cube root of } x$. Then students will find the equations that model those graphs. Students will explore solving radical equations by considering inputs and outputs of radical functions. Students will be introduced to algebraic unpacking, a strategy that relies on working backwards and using inverse operations to find the inverse of a function.

Objectives: Students will be able to:

- Graph square root functions.
- Compare square root functions using average rates of change.
- Solve real-life problems involving square root functions.
- Graph cube root functions.
- Compare cube root functions using average rates of change.
- Solve real-life problems involving cube root functions.
- Solve radical equations.
- Identify extraneous solutions.

- Solve real-life problems involving radical equations.
- Find inverses of relations.
- Explore inverses of functions.
- Find inverses of functions algebraically.
- Find inverses of nonlinear functions.

Essential Questions:

- What are some of the characteristics of the graph of a square root function?
- What are some of the characteristics of the graph of a cube root function?
- How can you solve an equation that contains square roots?
- How are a function and its inverse related?

Common Core State Standards/Learning Targets:

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

HSF-IF.B.4 For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship.

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

HSF-IF.C.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

HSF-IF.C.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum.

HSA-CED.A.1 Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions.

HSF-BF.B.4a Solve an equation of the form $f(x) = c$ for a simple function f that has an inverse and write an expression for the inverse.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Nature/Science, Career connection, Animal Science, Real world application

10.1-Nature/Science-Tsunami problem,-Career connection problem-Firefighting problem, 10.2-Animal Science-Asian Elephant problem, 10.3-Real world connection-Trapeze artist problem, 10.4-Animal Science- Crow feeding habits problem

Overview of Activities	Teacher's Guide/ Resources	Core Instructional Materials	Technology Infusion
10.1 Graphing Square Root Functions 10.2 Graphing Cube Root Functions 10.3 Solving Radical Equations 10.4 Inverse of a Function	Big Ideas Math Teachers Guide 540-581 Big Ideas website	Student Edition p. 541-580 Record and Practice	<ul style="list-style-type: none">● Smart Board Applications● Google Applications

	Desmos IXL	Journal pg 306-326 TI-84 graphing calculators	<ul style="list-style-type: none"> ● Big ideas math website-student assignments ● Desmos ● IXL:FF.1-FF.5, F.15
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Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz 10.1-10.2 Chapter 10 Test</p> <p>Suggested skills to be assessed: Graph square root functions. Compare square root functions using average rates of change. Solve real-life problems involving square root functions. Graph cube root functions. Compare cube root functions using average rates of change. Solve real-life problems involving cube root functions. Solve radical equations. Identify extraneous solutions. Solve real-life problems involving radical equations. Find inverses of relations. Explore inverses of functions. Find inverses of functions algebraically. Find inverses of nonlinear functions.</p>

Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words to assist students' understanding of instructional texts. • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's relationships with people, societal institutions, nature and culture. • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).

<p>to assist with task, so that all are aware of expectations.</p> <ul style="list-style-type: none">• Create modified assessments.• Allow students to utilize online books, when available, to listen to oral recorded reading.• Provide individualized assistance as necessary.• Allow for group work (strategically selected) and collaboration as necessary.• Utilize homework recorder within SIS.• Allow for copies of notes to be shared out.• Utilize assistive technology as appropriate.• Provide meaningful feedback and utilize teachable moments.• Utilize graphic organizers• Introduce/review study skills• Provide reading material at or slightly above students' reading levels.• Utilize manipulatives as necessary.• Establish a consistent and daily routine			
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Quinton Township School District
Algebra/Mathematics
Grade 8

Pacing Chart/Curriculum MAP

Marking Period:	4	Unit Title:	Data Analysis and Displays	Pacing:	17 days
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Unit Summary: In this unit, students will analyze data and represent data using multiple displays. Students will investigate measures of center and variation. Students will create a box-and-whisker plot using data. Students will answer questions about the meaning of the quartiles, range, and interquartile range. Students will identify whether distribution is skewed, symmetric, or bimodal. Students will collect class data to explore two-way tables. Students will work collaboratively to solve real-world scenarios by displaying data in a variety of ways.

Objectives: Students will be able to:

- Compare the mean, median, and mode of a data set.
- Find the range and standard deviation of a data set.
- Identify the effects of transformations on data.
- Use box-and-whisker plots to represent data sets.
- Interpret box-and-whisker plots.
- Use box-and-whisker plots to compare data sets.
- Describe the shapes of data distributions.
- Use the shapes of data distributions to choose appropriate measures.
- Compare data distributions.
- Find and interpret marginal frequencies.
- Make two-way tables.

- Find relative and conditional relative frequencies.
- Use two-way tables to recognize associations in data.
- Classify data as quantitative or qualitative.
- Choose and create appropriate data displays.
- Analyze misleading graphs.

Essential Questions:

- How can you describe the variation of a data set?
- How can you use a box-and-whisker plot to describe a data set?
- How can you use a histogram to characterize the basic shape of a distribution?
- How can you read and make a two-way table?
- How can you display data in a way that helps you make decisions?

Common Core State Standards/Learning Targets:

HSS-ID.A.3 Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).

HSS-ID.A.1 Represent data with plots on the real number line (dot plots, histograms, and box plots).

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

HSS-ID.B.5 Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data.

Interdisciplinary Connections/Including 21st Century Themes and Skills:

21st Century Theme: Financial, Economic, Business, and Entrepreneurial Literacy

21st Century Skills: Critical Thinking and Problem Solving

21st Century Life and Career Standards

9.1.8.D.1:Determine how saving contributes to financial well-being,9.1.8.E.1:Explain what it means to be a responsible consumer and the factors to consider when making consumer decisions. 9.2.8.B.3:Evaluate communication, collaboration, and leadership skills that can be developed through work, school, home, and extracurricular activities for use in a career, 9.2.8.B.1:Research careers within the 16 Career Clusters® and determine attributes of career success.

21st Century Career Ready Practices

CRP3 Attend to personal health and financial well-being

CRP4 Communicate clearly and effectively and with reason

CRP6 Demonstrate creativity and innovation

CRP8 Utilize critical thinking to make sense of problems and persevere in solving them

CRP11. Use technology to enhance productivity.

Interdisciplinary connections:

Science/Genetics, Music, Real world application

11.1-Real world connection-Altitudes of planes, Bowling scores problem, 11.2-Real world application- Backpacking problem,Music-Length of songs played at a concert problem, 11.3-Real world application-Shoes problem, 11.4-Real world application- watching sports on TV problem, 11.5- Science/Genetics-eye color survey

Overview of Activities	Teacher’s Guide/ Resources	Core Instructional Materials	Technology Infusion
<p>11.1 Measures of Center and Variation 11.2 Box-and-Whisker Plots 11.3 Shapes of Distributions 11.4 Two-Way Tables 11.5 Choosing a Data Display</p>	<p>Big Ideas Math Teacher’s Guide pg. 582-629</p> <p>Big Ideas website</p> <p>Desmos.com</p>	<p>Student Edition p. 583-628</p> <p>Record and Practice Journal pg 327-353</p> <p>TI-84 graphing calculators</p>	<ul style="list-style-type: none"> ● Smart Board Applications ● Google Applications ● Big ideas math website-student assignments ● Desmos

			<ul style="list-style-type: none"> IXL:R.2,4,6,7, GG. 1, 3-7
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Formative Assessment Plan	Summative Assessment Plan
<p><i>Formative assessment informs instruction and is on going through a unit to determine how students are progressing with the high expectations of standards.</i></p> <p>Suggested activities to assess student progress: Weekly Homework Completion Classwork & Basic Skill Practice Corrections & Reflections Kahoot! Quizizz Desmos Big Ideas math online assessment tools Rubric-for projects Self-reflection</p>	<p><i>Summative assessment is an opportunity for students to demonstrate mastery of the skills taught during a particular unit.</i></p> <p>Final Assessment/Benchmark/Project: Quiz 11.1-11.3 Chapter 11 Test Benchmark Assessment Spring MAP Benchmark Assessment PARCC Assessment Water Park Project</p> <p>Suggested skills to be assessed: <i>Compare the mean, median, and mode of a data set. Find the range and standard deviation of a data set. Identify the effects of transformations on data. Use box-and-whisker plots to represent data sets. Interpret box-and-whisker plots. Use box-and-whisker plots to compare data sets. Describe the shapes of data distributions. Use the shapes of data distributions to choose appropriate measures. Compare data distributions. Find and interpret marginal frequencies. Make two-way tables. Find relative and conditional relative frequencies. Use two-way tables to recognize associations in data.</i></p>

Classify data as quantitative or qualitative. Choose and create appropriate data displays. Analyze misleading graphs.

Differentiation

Special Education	ELL	At Risk	Gifted and Talented
<ul style="list-style-type: none"> • RTI • Modify and accommodate as listed in student's IEP or 504 plan • Utilize effective amount of wait time • Hold high expectations • Communicate directions clearly and concisely and repeat, reword, modify as necessary. • Utilize open-ended questioning techniques • Utilize scaffolding to support instruction. • Chunk tasks into smaller components • Provide step by step instructions • Model and use visuals as often as possible • Utilize extended time and/or reduce amount of items given for homework, quizzes, and tests. • Teach Tiers 1,2, and 3 words 	<ul style="list-style-type: none"> • RTI • Speech/Language Therapy • Rosetta Stone • Hold high expectations • Provide English/Spanish Dictionary for use • Place with Spanish speaking teacher/paraprofessional as available • Learn/Utilize/Display some words in the students' native language • Invite student to after school tutoring sessions • Basic Skills Instruction • Utilize formative assessments to drive instruction • Translate printed communications for parents in native language • Hold conferences with translator present • Utilize additional NJDOE resources/recommendations • Review Special Education listing for additional recommendations 	<ul style="list-style-type: none"> • RTI Tiered Interventions following RTI framework • Support instruction with RTI intervention resources • Provide after school tutoring services • Basic Skills Instruction • Hold high expectations • Utilize Go Math! RTI strategies • Fountas and Pinnell Phonics • Hold parent conferences fall and spring • Make modifications to instructional plans based on I and RS Plan. • Develop a record system to encourage good behavior and completion of work. • Establish a consistent and daily routine. 	<ul style="list-style-type: none"> • Organize the curriculum to include more elaborate, complex, and in-depth study of major ideas and problems through Compacting. • Allow for the development and application of productive thinking skills to enable students to re-conceptualize existing knowledge and/or generate new knowledge. • Enable students to explore continually changing knowledge and information and develop the attitude that knowledge is worth pursuing in an open world. • Encourage exposure to, selection and use of appropriate and specialized resources. • Promote self-initiated and self-directed learning and growth. • Provide for the development of self-understanding of one's

<p>to assist students' understanding of instructional texts.</p> <ul style="list-style-type: none"> • Utilize a variety of formative assessments to drive next point of instruction/differentiated instructional practices. • Create rubrics/allow students to assist with task, so that all are aware of expectations. • Create modified assessments. • Allow students to utilize online books, when available, to listen to oral recorded reading. • Provide individualized assistance as necessary. • Allow for group work (strategically selected) and collaboration as necessary. • Utilize homework recorder within SIS. • Allow for copies of notes to be shared out. • Utilize assistive technology as appropriate. • Provide meaningful feedback and utilize teachable moments. • Utilize graphic organizers • Introduce/review study skills • Provide reading material at or slightly above students' reading levels. • Utilize manipulatives as necessary. • Establish a consistent and daily routine 	<ul style="list-style-type: none"> • Establish a consistent and daily routine 		<p>relationships with people, societal institutions, nature and culture.</p> <ul style="list-style-type: none"> • Continue to offer Accelerated Mathematics 7 (7th grade) and Algebra 1 (8th grade).
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