



# Township of Ocean Schools

Assistant Superintendent  
Office of Teaching and Learning

## **SPARTAN MISSION:**

*Meeting the needs of all students with a proud tradition of academic excellence.*

DEPARTMENT: Mathematics

COURSE: Algebra I

**School:** Township of Ocean Intermediate School &  
Ocean Township High School

**Course:** Algebra I

**Department:** Mathematics

Board Approval	Supervisor	Notes
July 2009	Janet Bluefield	Born Date
July 2012	Janet Bluefield	Revisions
August 2017	Nichole Kerney	Revisions
March 2019	Nichole Kerney	Review
August 2022	Gerard Marrone	Alignment to Standards

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DEPARTMENT: Mathematics

COURSE: Algebra I

Pacing Guide			
Week	Marking Period 1	Week	Marking Period 3
1	Number Sense and Expressions	21	Exponents & Exponential Functions
2	Number Sense and Expressions	22	Exponents & Exponential Functions
3	Solving Equations & Inequalities	23	Polynomial Expressions & Factoring
4	Solving Equations & Inequalities	24	Polynomial Expressions & Factoring
5	Solving Equations & Inequalities	25	Polynomial Expressions & Factoring
6	Solving Equations & Inequalities	26	Polynomial Expressions & Factoring
7	Relations & Functions	27	Quadratic Equations & Functions
8	Relations & Functions	28	Quadratic Equations & Functions
9	Linear Equations & Inequalities	29	Quadratic Equations & Functions
10	Linear Equations & Inequalities	30	Quadratic Equations & Functions
Week	Marking Period 2	Week	Marking Period 4
11	Linear Equations & Inequalities	31	Quadratic Equations & Functions
12	Linear Equations & Inequalities	32	Radical Expressions & Equations
13	Linear Equations & Inequalities	33	Radical Expressions & Equations
14	Systems of Equations	34	Radical Expressions & Equations
15	Systems of Equations	35	Probability, Data, & Statistics

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16	Systems of Equations	36	Probability, Data, & Statistics
17	Systems of Equations	37	Probability, Data, & Statistics
18	Systems of Equations	38	*Rational Functions
19	Exponents & Exponential Functions	39	*Rational Functions
20	Exponents & Exponential Functions	40	*Rational Functions

### Core Instructional & Supplemental Materials including various levels of Texts

Core Instruction: Big Ideas Algebra 1 Textbook and Ebook (Cengage Learning)  
Supplemental: iXL Math, Kuta, PARCC Released Questions, 3 Acts Math and Desmos  
Special Education and ELL Supplemental: Video Tutor - BigIdeasMath.com

Time Frame	5 blocks (A/B block: 2 weeks, Semester: 1 week)
Topic	
Number Sense and Expressions	
Alignment to Standards	
<a href="#">N.Q.1, N.RN.3, A.SSE.1.a, A.CED.2, F.IF.4</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"> <li>• How do you evaluate algebraic expressions and powers?</li> <li>• How do you model relationships with variables and equations?</li> <li>• How do you simplify expressions and formulas?</li> <li>• How do you classify and compare real numbers?</li> <li>• How do you represent functions as tables, graphs, and rules?</li> <li>• How do you combine numbers using order of operations?</li> <li>• How do you use the distributive property to combine like terms?</li> </ul>	

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- How do you use the properties to solve equations?

SWBAT demonstrate understanding of the following:

- How large amounts of data are presented in a concise format, such as a graph or table.
- What happens to positive and negative values when they are combined.

Learning Activities:

- Video Tutor-phschool.com
- Modeling Activity
- Real-World Application-reading graphs in current newspapers
- Play Order of Operations Game
- Algebra Tile Activity
- Human Number Line
- Group Practice

## Assessments

### **Formative:**

- Classwork and Homework
- IXL Practice
- Teacher Observation
- Entrance/Exit Cards

### **Summative:**

- Mid-unit Quizzes
- Topic Tests

### **Alternative:**

- Kahoot
- Quizizz

## Interdisciplinary Connections

Science: MS-ETS1-1: Students estimate irrational numbers while defining the criteria and constraints of a design problem with sufficient precision to ensure a successful solution, taking into account relevant scientific principles and potential impacts on people and the natural environment that may limit possible solutions..

## Career Readiness, Life Literacies, and Key Skills

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COURSE: Algebra I

### Technology Integration

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Students will access the Big Ideas online ebook to further investigate lesson concepts and demonstrate understanding of standards.

- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Students will use internet based game sites such as Quizizz, Kahoot, and Quizlet live to reflect on their learning progress.

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

Supplemental instruction and math games will be presented using IXL Math and Video Tutor bigideasmath.com.

- 9.4.12.TL.1: Assess digital tools based on features such as accessibility options, capacities, and utility for accomplishing a specified task

Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion utilizing pre-learned etiquette about blended learning platforms.

- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

### Career Education

CRP4: Communicate clearly and effectively with reason.

Time Frame	10 blocks (A/B block: 4 weeks, Semester: 2 weeks)
Topic	
Solving Equations and Inequalities	
Alignment to Standards	

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A.SSE.1.a, A.REI.1, A.REI.3, A.CED.1, A.CED.3, A.CED.4

### Learning Objectives and Activities

SWBAT answer the following questions:

- How do you solve multi-step equations and inequalities?
- How can you determine the solution of an equation or inequality (no solution, infinite solutions, one solution)?
- How do you transform a literal equation?
- How do you solve a proportion?
- How do you model an equation for a real-life application?
- How do you find percent of change?
- How do you graph an inequality on a number line?
- How do you solve an absolute value equation?
- How is solving an absolute value inequality different from an equation?
- How do you solve a problem using a problem solving plan?
- \*How do you solve a mixture problem (such as weighted averages)?
- \*How do you solve a uniform motion problem (such as opposite direction, same direction, and back and forth)?

SWBAT demonstrate understanding of the following:

- When solving an equation, 3 things may result:  $x$  will equal a number, the  $x$  will eliminate leaving either a true or false statement- if true, there are infinite solutions, if false, and there are no solutions to the equation.
- The purpose of transforming a literal equation is to solve for a different value, such as  $\text{Area} = \text{length} \times \text{width}$ , what if you had the area and the width, how would you find the length?
- To solve a proportion, cross-multiplication is most effective.
- An inequality results in an infinite amount of answers with an ending or beginning value.
- Absolute value equations result in an infinite amount of points between two values or outside of two values.
- Absolute value inequalities result in an infinite amount of points between two values or outside of two values.

Learning Activities:

- My mom is twice my age. Five years ago, she was 5 more than twice my age. How old am I? The result will be the same on both sides, meaning that I could be any age for this problem.
- Using algebra tiles and a scale to show that what you do to one side of an equation, you must do to the other side.
- Use communicators.

\* Topics completed in Advanced/Honors; in regular level differentiate and include if time permits.

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COURSE: Algebra I

### Assessments

#### **Formative:**

- Daily Practice Problems
- Class Debate of Approaches/Mathematical Methods
- Graphic Organizer
- Math Scavenger Hunt/Trail

#### **Summative:**

- Mid-unit Quizzes
- Topic Tests
- Problem-based Quiz/Test on creating equations from real-world situation

#### **Alternative:**

- Observation Assessment with Problem-solving
- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

### Interdisciplinary Connections

### Career Readiness, Life Literacies, and Key Skills

### Technology Integration

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Video Tutor [bigideasmath.com](http://bigideasmath.com).

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Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion utilizing pre-learned etiquette about blended learning platforms.

- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

### Career Education

CRP6: Demonstrate creativity and innovation.

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

Time Frame	5 blocks (A/B block: 2 weeks, Semester: 1 week)
Topic	
Relations and Functions	
Alignment to Standards	
<a href="#">N.Q.1</a> , <a href="#">N.Q.2</a> , <a href="#">A.CED.2</a> , <a href="#">A.CED.3</a> , <a href="#">A.REI.10</a> , <a href="#">F.IF.1</a> , <a href="#">F.IF.2</a> , <a href="#">F.IF.4</a> , <a href="#">F.IF.5</a> , <a href="#">F.IF.7.a</a> , <a href="#">F.IF.9</a> , <a href="#">F.LE.2</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"> <li>How do you interpret a graph given a situation?</li> <li>What is a function/relation?</li> <li>What are the different ways to represent a function?</li> <li>Can you write a rule from a table?</li> <li>How do you determine if a relation in a table or graph is a function?</li> </ul> <p>SWBAT demonstrate understanding of the following:</p> <ul style="list-style-type: none"> <li>Function patterns can be represented in two variables.</li> <li>Functional relationship relates the value of one variable, such as <math>y</math> or <math>f(x)</math>, to another variable, such as <math>x</math>.</li> <li>Functional relationships can be related visually by graphs, as well as by sets, rules, tables, and mappings.</li> </ul>	

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### Learning Activities:

- Video tutor – bigideasmath.com
- Worksheets on  $f(x)$ , real life situations, writing function rules from words
- Discussions on graphs from 5.1, worksheets
- TI 83 – table, table set up
- PowerPoint slides on teacher drive

### Assessments

#### **Formative:**

- Classwork and Homework
- Daily Practice Problems
- Teacher Observation
- Math Scavenger Hunt/Trail
- Entrance/Exit Cards

#### **Summative:**

- Mid-unit Quizzes
- Topic Tests

#### **Alternative:**

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

### Interdisciplinary Connections

Science: MS-PS3-1: In lessons on comparing distance-time graphs to speed-time graphs students will construct and interpret graphical displays of data to describe the relationships of kinetic energy to the mass of an object and to the speed of an object.

### Career Readiness, Life Literacies, and Key Skills

9.1.8.CDM.1: When applying linear functions to variable rates and constant rates students will compare and contrast the use of credit cards and debit cards for specific purchases and the advantages and disadvantages of using each.

### Technology Integration

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives

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COURSE: Algebra I

on a real-world problem.

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- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

## Career Education

CRP4: Communicate clearly and effectively with reason.

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

Time Frame	12 blocks (A/B block: 5 weeks, Semester: 2.5 weeks)
Topic	
Linear Equations and Inequalities	
Alignment to Standards	





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N.Q.2, F.IF.4, F.IF.5, F.IF.6, F.IF.7.a, F.BF.1.a, F.BF.3, F.LE.2, F.LE.5, S.ID.7, A.CED.2, A.CED.3, A.REI.10, A.REI.12

### Learning Objectives and Activities

SWBAT answer the following questions:

- How do you find the slope of a line and interpret slope as a rate of change from tables and graphs?
- How do you write and graph equations in slope-intercept form, standard form and point-slope form?
- How do you write an equation of a line given two points?
- How do you write equations of parallel and perpendicular lines?
- How do you graph an absolute value equation in two variables?
- How do you graph a linear inequality in two variables?
- How do you graph an absolute value equation in two variables?
- How does a transformation of absolute value equations take place?

SWBAT demonstrate understanding of the following:

- Slope is a ratio of rise over run
- Determine the sign of the slope by looking at the line from left to right
- There are many ways to solve problems but some are more efficient than others.
- Graphs and equations are alternative ways for depicting and analyzing patterns of change.
- Functional relationships can be expressed in real contexts, graphs, algebraic equations, tables and words. Each representation of a given function is simply a different way of expressing the same idea.
- In an absolute value equation, the "a" widens or narrows the function, the "h" shifts it horizontally, and the "k" shifts it vertically.

Learning Activities:

- Graphing a line on a coordinate plane constructed on the floor of the classroom
- Use a graphing calculator or website, such as, [http://enlvm.usu.edu/ma/nav/activity.jsp?sid=shared&cid=emready@eqns\\_lines&lid=4](http://enlvm.usu.edu/ma/nav/activity.jsp?sid=shared&cid=emready@eqns_lines&lid=4) to discover how changing the coefficient of x or the constant changes the slope and y-intercept in the graph.
- Use the graphing calculator with the Smart board to engage class discussions
- Green Globes software
- Graphing calculator "Transform" to discover transformations of absolute value graphs
- Desmos

### Assessments

**Formative:**

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COURSE: Algebra I

- Daily Practice Problems
- IXL Practice
- Teacher Observation
- Graphic Organizer

### **Summative:**

- Mid-unit Quizzes
- Topic Tests

### **Alternative:**

- Observation Assessment with Problem-solving
- Kahoot/Quizizz

### Interdisciplinary Connections

### Career Readiness, Life Literacies, and Key Skills

### Technology Integration

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COURSE: Algebra I

- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

### Career Education

CRP6: Demonstrate creativity and innovation.

CRP11: Use technology to enhance productivity.

Time Frame	12 blocks (A/B block: 5 weeks, Semester: 2.5 weeks)
Topic	
Systems of Equations	
Alignment to Standards	
<a href="#">N.Q.2</a> , <a href="#">N.Q.3</a> , <a href="#">A.CED.2</a> , <a href="#">A.CED.3</a> , <a href="#">A.REI.5</a> , <a href="#">A.REI.6</a> , <a href="#">A.REI.10</a> , <a href="#">A.REI.11</a> , <a href="#">F.IF.2</a> , <a href="#">F.IF.9</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"> <li>How do you solve a system by graphing?</li> <li>How do you solve a system by substitution?</li> <li>How do you solve a system by eliminating a variable?</li> <li>What kind of application problem can be solved using a system? How do you determine the number of solutions of a system?</li> </ul> <p>SWBAT demonstrate understanding of the following:</p> <ul style="list-style-type: none"> <li>The point of intersection of two linear equations can be determined by several methods (graphing, substitution, elimination).</li> <li>Systems of equations can have no solutions, 1 solution or infinite solutions depending on the equations in the system.</li> <li>In some cases one method may be difficult and another method may be a better choice. In some cases the lines may be parallel or the same line.</li> <li>Solving a system of equations is a useful way to find solutions to real world problems (ie break even point and other applications)</li> </ul> <p>Learning Activities:</p> <ul style="list-style-type: none"> <li>Video tutor – phschool.com</li> <li>TI 83 – tables, graphs p380</li> <li>Worksheets</li> </ul>	

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COURSE: Algebra I

- Partner lab activity – pilot rescue mission
- Modeling real world problems
- Active math – interactive textbook
- Derive computer lab
- Communicators

### Assessments

#### **Formative:**

- Classwork and Homework
- Class Debate of Approaches/Mathematical Methods
- Math Scavenger Hunt/Trail
- Entrance/Exit Cards

#### **Summative:**

- Mid-unit Quizzes
- Topic Tests
- Problem-based Quiz/Test on systems in the real-world

#### **Benchmark:**

- Cumulative midterm exam with multiple choice, short answer, and extended constructed response questions.

#### **Alternative:**

- Observation Assessment with Problem-solving
- Project - Determine which is the better buy?
- Individual or group productive struggle assessment during introductory lessons
- Derive computer lab on systems

### Interdisciplinary Connections

### Career Readiness, Life Literacies, and Key Skills

9.1.8.CDM.2: In solving a system of equations students will demonstrate an understanding of the terminology associated with different types of credit (e.g., credit cards, installment loans, mortgages, lines of credit) and compare and calculate the interest rates associated with each.

### Technology Integration

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create

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- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

## Career Education

CRP2: Apply appropriate academic and technical skills.

CRP11: Use technology to enhance productivity.

Time Frame	10 blocks (A/B block: 4 weeks, Semester: 2 weeks)
Topic	
Exponents and Exponential Functions	
Alignment to Standards	

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[N.RN.1, A.SSE.3.c, A.SSE.1.b, A.CED.2, A.REI.10, F.IF.2, F.IF.7.e, F.IF.9, F.BF.3, F.LE.1.a, F.LE.1.b, F.LE.1.c, F.LE.2, F.LE.3, F.LE.5](#)

### Learning Objectives and Activities

SWBAT answer the following questions:

- How do you use exponent properties involving products and quotients?
- How do you simplify expressions using zero and negative exponents?
- How do you transform into scientific notation?
- How do you simplify exponential expressions with multiple variables?
- How do you simplify a power to a power?
- What does an exponential function look like?
- How do you write and graph an exponential growth/decay function?

SWBAT demonstrate understanding of the following:

- To simplify algebraic expressions with exponents.
- Recognize and graph exponential functions with a table of values
- Real world situations involving exponential relationships can be solved using multiple representations

Learning Activities:

- Video tutor – bigideasmath.com
- TI 83 – explore exponential graphs
- Experiment – exponential growth or decay model (ie m&m activity)
- Worksheets
- PowerPoint slides on teacher drive – “monomials rules review”
- Jeopardy – computer lab or projector.

### Assessments

#### **Formative:**

- Classwork and Homework
- Daily Practice Problems
- Teacher Observation
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- Entrance/Exit Cards

#### **Summative:**

- Mid-unit Quizzes
- Topic Tests

#### **Alternative:**

- Observation Assessment with Problem-solving

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- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

### Interdisciplinary Connections

### Career Readiness, Life Literacies, and Key Skills

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Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion utilizing pre-learned etiquette about blended learning platforms.

- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

Students will use Desmos in order to discover new concepts involving graphing and functions.

- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

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# Township of Ocean Schools

Assistant Superintendent  
Office of Teaching and Learning

## **SPARTAN MISSION:**

*Meeting the needs of all students with a proud tradition of academic excellence.*

DEPARTMENT: Mathematics

COURSE: Algebra I

### Career Education

CRP6: Demonstrate creativity and innovation.  
CRP11: Use technology to enhance productivity.

Time Frame	10 blocks (A/B block: 4 weeks, Semester: 2 weeks)
Topic	
Polynomial Expressions and Factoring	
Alignment to Standards	
<a href="#">A.APR.1</a> , <a href="#">A.APR.3</a> , <a href="#">A.APR.4</a> , <a href="#">A.SSE.2</a> , <a href="#">A.SSE.3.a</a> , <a href="#">A.CED.1</a> , <a href="#">A.REI.4.b</a> , <a href="#">F.IF.7.c</a> , <a href="#">F.IF.8.a</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"><li>• How do you factor using the greatest common factor?</li><li>• How do you add, subtract, and multiply polynomials?</li><li>• How do you use special product patterns to multiply binomials?</li><li>• How do you factor a difference of squares?</li><li>• How do you factor a perfect square trinomial?</li><li>• How do you factor a trinomial with a leading coefficient?</li><li>• How do you factor completely?</li></ul> <p>SWBAT demonstrate understanding of the following:</p> <ul style="list-style-type: none"><li>• Understanding the properties of real numbers can be used to multiply a monomial by a polynomial or simplify the product of binomials.</li><li>• Factoring is the opposite of the distributive property.</li><li>• What does it mean to find a factor of a number?</li><li>• Explain why a factored expression is useful-what can we do with it?</li></ul> <p>Learning Activities:</p> <ul style="list-style-type: none"><li>• Factoring Relay Game</li><li>• <a href="http://www.hippocampus.org">www.hippocampus.org</a></li><li>• Algebra Tiles Activity</li><li>• Using Models to Factor</li><li>• Small group practice</li><li>• Derive 5</li></ul>	

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DEPARTMENT: Mathematics

COURSE: Algebra I

- Communicators

### Assessments

#### **Formative:**

- Classwork and Homework
- IXL Practice
- Teacher Observation
- Math Scavenger Hunt/Trail
- Entrance/Exit Cards

#### **Summative:**

- Mid-unit Quizzes
- Topic Tests
- Problem-based Quiz/Test on Maximization

#### **Alternative:**

- Observation Assessment with Problem-solving
- Individual or group productive struggle assessment during introductory lessons

### Interdisciplinary Connections

### Career Readiness, Life Literacies, and Key Skills

### Technology Integration

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Students will access the Big Ideas online ebook to further investigate lesson concepts and demonstrate understanding of standards.

- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Students will use internet based game sites such as Quizizz, Kahoot, and Quizlet live to reflect on their learning progress.

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve

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DEPARTMENT: Mathematics

COURSE: Algebra I

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Students will use Google Classroom to collaborate, work towards solving authentic problems, or participate in an online classroom discussion utilizing pre-learned etiquette about blended learning platforms.

- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

Students will use graphing calculators to use math tools strategically and attend to precision.

- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

## Career Education

CRP4: Communicate clearly and effectively with reason.

Time Frame	12 blocks (A/B block: 5 weeks, Semester: 2.5 weeks)
Topic	
Quadratic Equations and Functions	
Alignment to Standards	
<a href="#">A.APR.3</a> , <a href="#">A.CED.1</a> , <a href="#">A.CED.2</a> , <a href="#">A.CED.3</a> , <a href="#">A.REI.4.a</a> , <a href="#">A.REI.4.b</a> , <a href="#">A.REI.10</a> , <a href="#">A.SSE.3.a</a> , <a href="#">A.SSE.3.b</a> , <a href="#">F.IF.2</a> , <a href="#">F.IF.4</a> , <a href="#">F.IF.5</a> , <a href="#">F.IF.7.a</a> , <a href="#">F.IF.7.c</a> , <a href="#">F.IF.8.a</a> , <a href="#">F.IF.9</a> , <a href="#">F.BF.3</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"> <li>• How do you graph a quadratic function?</li> <li>• How do you solve a quadratic using factoring?</li> <li>• How do you solve a quadratic using graphing?</li> <li>• How do you solve a quadratic using square roots?</li> <li>• How do you solve a quadratic using the quadratic formula?</li> <li>• What does the discriminant tell you about the solutions of a quadratic function?</li> </ul>	

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COURSE: Algebra I

SWBAT demonstrate understanding of the following:

- Students will be able to distinguish second degree equations (quadratic) from first degree (linear). Students will be able to compare and identify applications of linear, quadratic or exponential functions as models of real world situations.
- The quadratic formula is most appropriately used when factoring a quadratic equation is not possible.

Learning Activities:

- Video tutor – bigideasmath.com
- TI 83 – compare transformations of parent function, compare linear, quadratic, exponential
- Green globes
- Internet project on powerpoint to determine applications of parabolas.
- Excel /TI 83 activity to find linear, quadratic, exponential regression trend line.
- Worksheets
- Communicators

## Assessments

### **Formative:**

- IXL Practice
- Teacher Observation
- Class Debate of Approaches/Mathematical Methods
- Graphic Organizer
- Math Scavenger Hunt/Trail
- Entrance/Exit Cards

### **Summative:**

- Mid-unit Quizzes
- Topic Tests

### **Alternative:**

- Observation Assessment with Problem-solving
- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

## Interdisciplinary Connections

## Career Readiness, Life Literacies, and Key Skills

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DEPARTMENT: Mathematics

COURSE: Algebra I

### Technology Integration

All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaboratively and to create and communicate knowledge.

- 9.4.8.TL.6: Collaborate to develop and publish work that provides perspectives on a real-world problem.

Students will access the Big Ideas online ebook to further investigate lesson concepts and demonstrate understanding of standards.

- 9.4.8.TL.3: Select appropriate tools to organize and present information digitally.

Students will use internet based game sites such as Quizizz, Kahoot, and Quizlet live to reflect on their learning progress.

- 9.4.5.CT.3: Describe how digital tools and technology may be used to solve problems.

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Students will use graphing calculators to use math tools strategically and attend to precision and will use Desmos in order to discover new concepts involving graphing and functions.

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### Career Education

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.





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DEPARTMENT: Mathematics

COURSE: Algebra I

Time Frame	8 blocks (A/B block: 3 weeks, Semester: 1.5 weeks)
Topic	
Radical Expressions and Equations	
Alignment to Standards	
<a href="#">A.REI.2, F.IF.7.b</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"><li>• How do you simplify a radical?</li><li>• How do you estimate a radical?</li><li>• How do you simplify radicals involving products and quotients?</li><li>• How do you simplify sums and differences?</li></ul> <p>SWBAT demonstrate understanding of the following:</p> <ul style="list-style-type: none"><li>• Operations can be performed with radical expressions.</li><li>• Radical expressions can be simplified by using factoring of the number into primes.</li><li>• Square roots are the reverse of perfect squares.</li><li>• Why can simplifying a radical first help when combining radical expressions?</li><li>• Why would we want to write 5 instead of <math>\sqrt{25}</math>?</li></ul> <p>Learning Activities:</p> <ul style="list-style-type: none"><li>• Create a table of and compare different radicals</li><li>• Small group practice</li><li>• Jeopardy</li><li>• Student presentation</li><li>• Communicators</li></ul>	
Assessments	
<p><b><u>Formative:</u></b></p> <ul style="list-style-type: none"><li>• Classwork and Homework</li><li>• Daily Practice Problems</li><li>• IXL Practice</li><li>• Teacher Observation</li></ul> <p><b><u>Summative:</u></b></p> <ul style="list-style-type: none"><li>• Mid-unit Quizzes</li><li>• Topic Tests</li></ul>	

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COURSE: Algebra I

### **Alternative:**

- Kahoot
- Quizizz

### Interdisciplinary Connections

### Career Readiness, Life Literacies, and Key Skills

### Technology Integration

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- 9.4.12.TL.4: Collaborate in online learning communities or social networks or virtual worlds to analyze and propose a resolution to a real-world problem.

### Career Education

CRP6: Demonstrate creativity and innovation.

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

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DEPARTMENT: Mathematics

COURSE: Algebra I

Time Frame	8 blocks (A/B block: 3 weeks, Semester: 1.5 weeks)
Topic	
Probability, Data, and Statistics	
Alignment to Standards	
<a href="#">N.Q.3, A.CED.2, F.IF.4, S.ID.1, S.ID.2, S.ID.3, S.ID.5, S.ID.6.a, S.ID.6.b, S.ID.6.c, S.ID.7, S.ID.8, S.ID.9, S.CP.1, S.CP.2, S.CP.3, S.CP.4, S.CP.5, S.CP.6, S.CP.8(+)</a>	
Learning Objectives and Activities	
<p>SWBAT answer the following questions:</p> <ul style="list-style-type: none"> <li>• How do you find the mean, median, mode and range?</li> <li>• How do you make and analyze data using a scatter plot, and a stem and leaf plot?</li> <li>• How do find theoretical and experimental probability?</li> <li>• How do you determine and find the probability of independent and dependent events?</li> <li>• How you find the line of best fit?</li> <li>• How do you use the line of best fit to predict an event?</li> </ul> <p>SWBAT demonstrate understanding of the following:</p> <ul style="list-style-type: none"> <li>• You can compare and make predictions about data by organizing graphically and analyzing spread and central tendencies.</li> <li>• Finding the line of best fit using the graphing calculator and by choosing 2 points, connecting them and finding the equation of that line.</li> <li>• Remember the difference between the independent and dependent variable- the independent comes "first" and dependent comes second, it depends on what happens with the other.</li> </ul> <p>Learning Activities:</p> <ul style="list-style-type: none"> <li>• Graphing calculator activity (such as height vs. shoe size)</li> <li>• Statistics packet</li> <li>• Graphing calculator overhead</li> <li>• <a href="http://www.mathtopia.com">www.mathtopia.com</a></li> </ul>	
Assessments	
<p><b>Formative:</b></p> <ul style="list-style-type: none"> <li>• Classwork and Homework</li> <li>• Teacher Observation</li> </ul>	

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COURSE: Algebra I

- Class Debate of Approaches/Mathematical Methods
- Entrance/Exit Cards

### **Summative:**

- Mid-unit Quizzes
- Topic Tests

### **Alternative:**

- Observation Assessment with Problem-solving
- Kahoot/Quizizz

### Interdisciplinary Connections

Science: HS-LS3-3: In this statistics unit students will apply concepts of statistics and probability to explain the variation and distribution of expressed traits in a population.

### Career Readiness, Life Literacies, and Key Skills

### Technology Integration

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COURSE: Algebra I

virtual worlds to analyze and propose a resolution to a real-world problem. Students will use graphing calculators to use math tools strategically and attend to precision.

- 9.4.8.IML.3: Create a digital visualization that effectively communicates a data set using formatting techniques such as form, position, size, color, movement, and spatial grouping

### Career Education

CRP2: Apply appropriate academic and technical skills.  
CRP4: Communicate clearly and effectively with reason.

Time Frame	7 blocks (A/B block: 3 weeks, Semester: 1.5 weeks)
Topic	
*Rational Functions (if time allows)	
Alignment to Standards	
<a href="#">A.APR.7</a>	

\* Unit completed in Advanced; in regular level differentiate topics and include if time permits.

### Learning Objectives and Activities

SWBAT answer the following questions:

- How do you simplify rational expressions?
- How do you multiply rational expressions?
- How do you divide rational expressions?
- How do you divide polynomials?
- How do you add and subtract rational expressions with common denominators?
- How do you add and subtract rational expressions with unlike denominators?
- How do you solve rational equations?

SWBAT demonstrate understanding of the following:

- A rational function can be written as the ratio of two polynomials.
- The domain of a rational function is defined as the set of all numbers except those that make the denominator equal to zero.
- Factoring the numerator and denominator and canceling out the factors is how to simplify.

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COURSE: Algebra I

### Learning Activities:

- Graph a rational function on a graphing calculator (activity lab)

### Assessments

#### **Formative:**

- IXL Practice
- Teacher Observation
- Math Scavenger Hunt/Trail
- Entrance/Exit Cards

#### **Summative:**

- Mid-unit Quizzes
- Topic Tests

#### **Benchmark:**

- Cumulative final exam with multiple choice, short answer, and extended constructed response questions.

#### **Alternative:**

- Kahoot/Quizizz
- Individual or group productive struggle assessment during introductory lessons

### Interdisciplinary Connections

ELA: W.9-10.1: When students are justifying their reasoning on short answer and extended constructed response questions they write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence.

### Career Readiness, Life Literacies, and Key Skills

### Technology Integration

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## Career Education

CRP6: Demonstrate creativity and innovation.

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

## Modifications (ELL, Special Education, At Risk Students, Gifted & Talented, & 504 Plans)

### **ELL:**

- Work toward longer passages as skills in English increase
- Use visuals
- Introduce key vocabulary before lesson
- Teacher models reading aloud daily
- Provide peer tutoring
- Use of Bilingual Dictionary
- Guided notes and/or scaffold outline for written assignments
- Provide students with English Learner leveled readers.

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COURSE: Algebra I

### **Supports for Students With IEPs:**

- Allow extra time to complete assignments or tests
- Guided notes and/or scaffold outline for written assignments
- Work in a small group
- Allow answers to be given orally or dictated
- Use large print books, Braille, or books on CD (digital text)
- Follow all IEP modifications

### **At-Risk Students:**

- Guided notes and/or scaffold outline for written assignments
- Introduce key vocabulary before lesson
- Work in a small group
- Lesson taught again using a differentiated approach
- Allow answers to be given orally or dictated
- Use visuals / Anchor Charts
- Leveled texts according to ability

### **Gifted and Talented:**

- Create an enhanced set of introductory activities (e.g. advance organizers, concept maps, concept puzzles)
- Provide options, alternatives and choices to differentiate and broaden the curriculum
- Organize and offer flexible small group learning activities
- Provide whole group enrichment explorations
- Teach cognitive and methodological skills
- Use center, stations, or contracts
- Organize integrated problem-solving simulations
- Propose interest-based extension activities
- Expose students to beyond level texts.

### **Supports for Students With 504 Plans:**

- Follow all the 504 plan modifications
- Text to speech/audio recorded selections
- Amplification system as needed
- Leveled texts according to ability
- Fine motor skill stations embedded in rotation as needed
- Modified or constrained spelling word lists

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- Provide anchor charts with high frequency words and phonemic patterns

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