DEPARTMENT Mathematics COURSE Algebra IA

Curriculum Development Timeline

School: Ocean Township High School

Course: Algebra IA

Department: Mathematics

Board Approval	Supervisor	Notes
July 2016	Amanda Maltese	Born Date
March 2019	Nichole Kerney	Review
August 2022	Gerard Marrone	Alignment to Standards

Township of Ocean Schools

Assistant Superintendent
Office of Teaching and Learning

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Township of Ocean Pacing Guide			
Week	Marking Period 1	**Week**	Marking Period 3
1	Number Sense and Expressions	11	Relations & Functions
2	Number Sense and Expressions	12	Relations & Functions
3	Number Sense and Expressions	13	Relations & Functions
4	Number Sense and Expressions	14	Relations & Functions
5	Solving Equations & Inequalities	15	Linear Equations & Inequalities
Week	Marking Period 2	**Week**	Marking Period 4
6	Solving Equations & Inequalities	16	Linear Equations & Inequalities
7	Solving Equations & Inequalities	17	Linear Equations & Inequalities
8	Solving Equations & Inequalities	18	Linear Equations & Inequalities
9	Solving Equations & Inequalities	19	Linear Equations & Inequalities
10	Relations & Functions	20	Linear Equations & Inequalities

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	4 Weeks (20 blocks)
Topic	
Number Sense and Expressions	
Alignment to Standards	
N.Q.1, N.RN.3, A.SSE.1.a, A.CED.2, F.IF.4	

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Learning Objectives and Activities

SWBAT answer the following questions:

- How do you evaluate algebraic expressions and powers?
- How do you model relationships with variables and equations?
- How do you simplify expressions and formulas?
- How do you classify and compare real numbers?
- How do you represent functions as tables, graphs, and rules?
- How do you combine numbers using order of operations?
- How do you use the distributive property to combine like terms?
- 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

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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

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.

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Time Frame	5 Weeks (25 blocks)

Topic

Solving Equations and Inequalities

Alignment to Standards

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 Area= length times 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 and 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

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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.

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 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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and demonstrate understanding of standards.

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

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

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- 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

CRP6: Demonstrate creativity and innovation.
CRP8: Utilize critical thinking to make sense of problems and persevere in solving them.

Time Frame	5 Weeks (25 blocks)

Topic

Relations and Functions

Alignment to Standards

N.Q.1, N.Q.2, A.CED.2, A.CED.3, A.REI.10, F.IF.1, F.IF.2, F.IF.4, F.IF.5, F.IF.7.a, F.IF.9, F.LE.2

Learning Objectives and Activities

SWBAT answer the following questions:

- How do you interpret a graph given a situation?
- What is a function/relation?
- What are the different ways to represent a function?

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- Can you write a rule from a table?
- How do you determine if a relation in a table or graph is a function?

SWBAT demonstrate understanding of the following:

- Function patterns can be represented in two variables.
- Functional relationship relates the value of one variable, such as y or f(x), to another variable, such as x.
- Functional relationships can be related visually by graphs, as well as by sets, rules, tables, and mappings.

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

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- 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.

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.

- 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.

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Time Frame	6 Weeks (30 blocks)

Topic

Linear Equations & Inequalities

Alignment to Standards

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 to discover how changing the coefficient of x or the constant changes the slope and y-intercept in the graph.

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- Use the graphing calculator with the Smart board to engage class discussions
- Green Globs software
- Graphing calculator "Transform" to discover transformations of absolute value graphs
- Desmos

Assessments

Formative:

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

Summative:

- Mid-unit Quizzes
- Topic Tests

Alternative:

- Observation Assessment with Problem-solving
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Interdisciplinary Connections

Career Readiness, Life Literacies, and Key Skills

Technology Integration

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Career Education

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

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.

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:

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- 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
- Provide anchor charts with high frequency words and phonemic patterns