

Glen Ridge Public Schools –Mathematics Curriculum



Course Title: Sixth Grade Math

Subject: Mathematics

Grade Level: 6

Duration: 1 year

Prerequisite: None

Elective or Required: Required

Mathematics Mission Statement

Mathematics is an integral part of our lives. Students must be actively involved in their mathematics education through the use of modeling and demonstrating the ability to persevere through problem solving. The mathematics curricula will emphasize critical thinking skills through a balance of logic and reasoning, attention to precision by utilizing patterns and structure, and bridging these ideas to cross-curricular learning. Students will be engaged and challenged in a student-centered learning environment that is developmentally appropriate and will communicate mathematical ideas, both in a verbal and written form. Through effectively applying hands-on manipulatives, basic computation skills and the use of technical writing to justify their processes, students will critique the work of themselves and others.

Course Description:

The fundamental goal of the Ridgewood Avenue school sixth grade math curriculum is to provide students with a solid foundation of the necessary math skills needed for advanced study in mathematics as well as everyday life. The math program allows teachers to provide differentiated instruction to accommodate the needs of each individual student and the cyclical nature of the *Holt McDougal Program* ensures that students will consistently be exposed to concepts throughout the school year.

The sixth grade curriculum encourages students to take an active process in their learning by providing opportunities to learn through hands-on activities as well as structured classroom learning. Throughout the course of the year, students will use previously

learned knowledge as well as their own abilities to successfully work through problem solving assignments, through which they will continue to prepare themselves for “real life” mathematical situations.

Throughout the course of the year, students will study the following units; Operations and properties, introduction to algebra, decimals, number theory and fractions, fraction operations, data collection and analysis, proportional relationships, geometric relationships, measurement and geometry, measurement: area and volume, integers and the coordinate plane, graphs, functions, and inequalities.

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Date Submitted: Summer 2017

Text: *Holt McDougal Mathematics Grade 6*, 2012 by Burger, Chard, Kennedy, Scheer, Renfro, Roby, Bennet, Hall, and Waits

Course Name: Sixth Grade Mathematics

Topic/Unit: 1 – Operations and Properties

Approximate # of Weeks: 2

Essential Questions:

How can counting and comparing numbers help to make sense of the world around us?

In what type of situation would you want to estimate?

How do you think order of operations will help you solve math problems?

How do you use exponents to represent numbers?

How can mathematical properties help to solve many different problems?

New Jersey Student Learning Standards for mathematics:

6.NS.2

6.NS.4

6.EE.1

6.EE.2

6.EE.3

Upon completion of this unit students will be able to:

- Estimate with whole numbers
- Use the algorithm for division and interpret the quotient and remainder in a real world setting.
- Represent numbers by using exponents
- Use the order of operations
- Use number properties to compute mentally

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.3 – Active Citizenship in the 21st Century

- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Math XL program (Pearson)
- Study Island
- Khan Academy
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Estimate with whole numbers (Holt McDougal)
- Activity – Use the Algorithm for division and interpret the quotient and remainder in a real world setting (Holt McDougal)
- Activity – Represent numbers by using exponents (Holt McDougal)
- Hands On Lab Activity – Use a graphing calculator to explore the order of operations (Holt McDougal)
- Activity – Use the order of operations (Holt McDougal)
- Activity – Use number properties to compute mentally (Holt McDougal)
- Activity – Fair Game Review (Big Ideas)
- Activity – Use number properties to compute mentally activities (Big Ideas)
- Game Activity – Palindromes (Holt McDougal)
- Project- Picture This (Holt McDougal)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island
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Methods of Assessments/Evaluation:

- Math XL
- Study Island
- Do Nows/Warm Ups
- Exit Slips

- Journals
- Check it Out! Problems (questions during lecture)
- Homework
- Quizzes
- Chapter Test
- Unit Project
- Alternative Assessment
- White Boards
- Thumbs Up/Thumbs Down
- Self-Assessments (Math Units)
- 3*2*1
- Classwork
- Online Quiz
- World Word Problems
- Find the Mistake
- Webpage
- Calculators
- Math/CS-Related Software
- Daily warm-ups

Resources/Including Online Resources

- Online Textbook Information: my.hrw.com
- Math XL program
- <https://www.khanacademy.org/>
- Teacher Webpage
- 6th Grade Textbook by Holt McDougal
- Big Ideas Textbook by Holt McDougal
- Online Games/Tools:
- <http://math-drills.com>
- <http://www.Khanacademy>
- <http://www.studyisland.com/web/index>

Topic/Unit: II – Introduction to Algebra

Approximate # of Weeks: 4-5

Essential Questions:

What are mathematical expressions, inequalities, and equations?

How can I use mathematical expressions, inequalities, and equations to evaluate real life situations?

How can I evaluate mathematical expressions, inequalities and equations?

How are function rules and expressions related?

How can you check the reasonableness of your solution?

New Jersey Student Learning Standards for mathematics:

6.EE.2
6.EE.2b
6.EE.2a
6.EE.3
6.EE.4
6.EE.5
6.EE.6
6.EE.7

Upon completion of this unit students will be able to:

- Translate between words and algebra
- Evaluate algebraic expressions
- Identify coefficients and terms
- Write Algebraic expressions involving whole numbers
- Solve one-step equations in one variable by using addition or subtraction.
- Solve one-step equations in one variable by using multiplication or division
- Solve equations in one variable that contain more than one operation
- Solve equations in one variable that contain variable terms on both sides
- Solve a formula for a given variable
- Read, write, solve, and graph inequalities

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Identify and evaluate expressions (Holt McDougal)
- Activity – Translate between words and math (Holt McDougal)
- Activity – Translate between tables and expressions; write expressions for tables and sequences (Holt McDougal)

- Hands On Lab Activity – Explore Area and perimeter of rectangles using grid paper (Holt McDougal)
- Activity – Determine whether a number is a solution of an equation (Holt McDougal)
- Activity – Solve whole number addition and subtraction equations (Holt McDougal)
- Activity – Solve whole number multiplication and division equations (Holt McDougal)
- Writing equations in One Variable (Big Ideas)
- Fair Game Review (Big Ideas)
- Solving two step equations (Big Ideas)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island
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Methods of Assessments/Evaluation:

- Math XL
- Study Island
- Do Nows/Warm Ups
- Exit Slips
- Journals
- Check it Out! Problems (questions during lecture)
- Homework
- Quizzes
- Chapter Test
- Unit Project
- Alternative Assessment
- White Boards
- Thumbs Up/Thumbs Down
- Self-Assessments (Math Units)
- 3*2*1
- Classwork
- Online Quiz
- World Word Problems
- Find the Mistake
- Webpage

- Calculators
- Math/CS-Related Software
- Daily warm-ups

-

Resources/Including Online Resources

- Online Textbook Information: my.hrw.com
- Teacher Webpage
- Sixth Grade Textbook by Holt McDougal
- Big Ideas Textbook by Holt McDougal
- Math XL program
- <https://www.khanacademy.org/>
- Online Games/Tools
 - <http://www.math-play.com/One-Step-Equation-Game.html>
 - <http://www.superteacherworksheets.com/>
 - <http://mathematicsgames.wordpress.com/>
 - <http://www.math.com/students/homeworkhelp.html>
 - <http://www.studyisland.com/web/index/>

Topic/Unit: III - Decimals

Approximate # Of Weeks: 2-3

Essential Questions:

How do you represent very large and very small numbers?
 How can we show multiple representations of decimals?
 How can we solve real life problems using whole numbers and decimals?
 Why is it important to understand place value?
 What is the whole unit in this situation?
 How big are the numbers in this problem?
 About how large will the sum, difference, product, or quotient be?
 How do these decimals compare to fractions that I know?

New Jersey Student Learning Standards for mathematics:

6.NS.3
 6.EE.7
 6.EE.6

Upon completion of this unit students will be able to:

- Write, compare, and order decimals using place value and number lines
- Estimate decimal sums, differences, products, and quotients
- Add and subtract decimals
- Multiply decimals by whole numbers and by decimals
- Divide decimals by whole numbers
- Divide whole numbers and decimals by decimals
- Solve problems by interpreting the quotient
- Solve equations involving decimals

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.1 – U.S. History: America in the World
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Write, compare, and order decimals using place value and number lines (Holt McDougal)
- Activity – Estimate decimal sums, differences, products, and quotients (Holt McDougal)
- Activity – Add and subtract decimals (Holt McDougal)
- Modeling Activity – Use decimal grids to model addition and subtraction of decimals (Holt McDougal)
- Modeling Activity – Use decimal grids to multiplication and division of decimals (Holt McDougal)
- Activity – Multiply decimals by whole numbers and decimals (Holt McDougal)
- Activity – Divide decimals by whole numbers (Holt McDougal)
- Activity – Divide whole numbers and decimals by decimals (Holt McDougal)
- Activity – Solve problems by interpreting the quotient (Holt McDougal)
- Activity – Solve equations involving decimals (Holt McDougal)
- Game Activity – Jumbles (Holt McDougal Lesson Alternative Assessment)
- Project- EZ2C Decimals (Holt McDougal)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)

- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island

Methods of Assessments/Evaluation:

- Math XL
- Study Island
- Do Nows/Warm Ups
- Exit Slips
- Journals
- Check it Out! Problems (questions during lecture)
- Homework
- Quizzes
- Chapter Test
- Unit Project
- Alternative Assessment
- White Boards
- Thumbs Up/Thumbs Down
- Self-Assessments (Math Units)
- 3*2*1
- Classwork
- Online Quiz
- World Word Problems
- Find the Mistake
- Webpage
- Calculators
- Math/CS-Related Software
- Daily warm-ups

Resources/Including Online Resources

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- Teacher Webpage
- Sixth Grade Textbook by Holt McDougal
- Big Ideas Textbook by Holt McDougal
- Online Games/Tools:
- Math XL program
- <https://www.khanacademy.org/>
- <http://www.studyisland.com/web/index/>
- <http://www.xpmath.com/index.php>

Topic/Unit: IV – Number Theory and Fractions

Approximate # Of Weeks: 3-4

Essential Questions:

How do we represent numbers in various ways?

How do numbers relate to each other?

What is the importance of predictable patterns?

How do you know that a fraction can be viewed as parts of a whole?

Will breaking a number into factors help solve the problem?

What relationships are revealed after breaking a number into factors?

What do factors and multiples of numbers tell me about the situation?

How can I find factors of numbers?

How can I find multiples of numbers?

What common factors and common multiples do numbers have?

New Jersey Student Learning Standards for mathematics:

6.NS.4

6.EE.2b

6.EE.3

6.EE.4

6.NS.7

Upon completion of this unit students will be able to:

- Write prime factorizations of composite numbers
- Find the greatest common factor of a set of numbers
- Factor numerical expressions and write equivalent numerical and algebraic expressions
- Convert between decimals and fractions
- Write equivalent fractions
- Convert between mixed numbers and improper fractions
- Use pictures and number lines to compare and order fractions

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.1 – U.S. History: America in the World
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Write prime factorization of composite numbers (Holt McDougal)
- Activity – Find the greatest common factor of a set of numbers (Holt McDougal)
- Activity – Factor numerical and algebraic expressions and write equivalent numerical and algebraic expressions (Holt McDougal)
- Technology Lab Activity – Use a graphing calculator to find the greatest common factor of two or more numbers (Holt McDougal)
- Hands On Lab Activity- Use decimal grids to show the relationship between decimals and fractions (Holt McDougal)
- Hands On Lab Activity- Use pattern blocks to model equivalent fractions (Holt McDougal)
- Activity – Write equivalent fractions (Holt McDougal)
- Activity – Convert between mixed numbers and improper fractions (Holt McDougal)
- Activity – Use pictures and number lines to compare and order fractions (Holt McDougal)
- Game Activity- Riddle me This
- Project Activity- Spec-Tag-Ular Number Theory

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)

Methods of Assessments/Evaluation:

- Math XL
- Study Island
- Do Nows/Warm Ups
- Exit Slips
- Journals
- Check it Out! Problems (questions during lecture)
- Homework
- Quizzes
- Chapter Test
- Unit Project
- Alternative Assessment
- White Boards
- Thumbs Up/Thumbs Down

- Self-Assessments (Math Units)
- 3*2*1
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- <https://www.khanacademy.org/>
- <http://www.studyisland.com/web/index/>
- <http://www.mathplayground.com/tangrams.html>
- <http://www.xpmath.com/index.php>

Topic/Unit: V – Fraction Operations

Approximate # Of Weeks: 2- 3

Essential Questions:

- What kinds of models can be used to show computation with fractions?
- Will strategies and algorithms we have developed apply to all fractional quantities?
- What do whole number operations reveal about the meaning of operations with fractions?
- Do results from algorithms support those found with models?
- How can estimation help in determining reasonableness?
- When do we need to consider amounts that do not represent whole numbers?
- Why can there be different fraction names for the same quantity?
- How can we tell when two names refer to the same quantity?
- How can we tell which of two fractions is greater?
- What are some situations in which fractions are commonly used?
- In what situations is a decimal name for a fraction quantity useful?
- How can we change a fraction name to the equivalent decimal name?

- Why are fractions with a denominator of 100 useful?

New Jersey Student Learning Standards for mathematics:

6.NS.4
6.EE.6
6.EE.7
6.NS.1

Upon completion of this unit students will be able to:

- Find the least common multiple of a group of numbers
- Add and subtract fractions with unlike denominators
- Regroup mixed numbers to subtract
- Solve equations by adding and subtracting fractions
- Multiply mixed numbers
- Divide fractions and mixed numbers
- Solve equations by multiplying and dividing fractions

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Find the least common multiple of a set of numbers (Holt McDougal)
- Activity – Add and subtract fractions with unlike denominators (Holt McDougal)
- Activity – Regroup mixed numbers to subtract (Holt McDougal)
- Activity – Solve equations by adding and subtracting fractions (Holt McDougal)
- Activity – Multiply mixed numbers (Holt McDougal)
- Hands On Lab Activity- Use grids to model division of fractions (Holt McDougal)
- Hands On Lab Activity- Use fraction bars to model the division of fractions in word problems (Holt McDougal)

- Activity – Solve equations by multiplying and dividing fractions (Holt McDougal)
- Activity – Convert between mixed numbers and improper fractions (Holt McDougal)
- Activity – Use pictures and number lines to compare and order fractions (Holt McDougal)
- Game Activity- Fraction Riddles
- Project Activity- Flipping over Fractions

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island

Methods of Assessments/Evaluation:

- Math XL
- Study Island
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- Daily warm-ups

Resources/Including Online Resources

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 - <http://www.mathplayground.com/tangrams.html>
 - <http://www.studyisland.com/web/index/>
 - <http://www.xpmath.com/index.php>

Topic/Unit: VI – Data Collection and Analysis

Approximate # Of Weeks: 3-4

Essential Questions:

How can information be gathered, recorded, and organized?

How does the type of data influence the choice of display?

How do charts, tables, and graphs help you interpret data?

What kinds of questions can and cannot be answered from a graph?

How can measurements and data be used to solve real world problems?

New Jersey Student Learning Standards for mathematics:

6.SP.2

6.SP.3

6.SP.1

6.SP.5c

6.SP.4

6.SP.5

6.NS.7c

6.NS.7d

6.SP.5a

6.SP.5b

6.SP.5d

Upon completion of this unit students will be able to:

- Find the range, mean, median, and mode of a data set

- Recognize a statistical question
- Organize data in tables and graphs
- Choose a table or graph to display data
- Learn the effect of additional data and outliers
- Record and organize data in line plots, frequency tables, and histograms
- Calculate, interpret, and compare measures of variation in a data set
- Create and interpret box-and-whisker plots
- Describe and compare data distribution by their center, spread, and shape, using box and whisker plots or dot plots

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Hands On Lab Activity- Use data and use counters to find the mean of a set of data. (Holt McDougal)
- Activity – Find the range, mean, median, and mode of a data set (Holt McDougal)
- Activity – Learn the effect of additional data and outliers (Holt McDougal)
- Activity – Calculate, interpret, and compare measures of variation in a data set (Holt McDougal)
- Activity – Organize data in line plots, frequency tables, and histograms (Holt McDougal)
- Hands On Lab Activity- Use a survey to collect, organize and display data (Holt McDougal)
- Extension Activity- Describe the distribution of a data set and make a cumulative frequency table and histogram (Holt McDougal)
- Activity – Describe and compare data distributions by their center, spread, and shape, using box and whisker plots or dot plots (Holt McDougal)
- Game Activity- A Thousand Words
- Project Activity- Graphing according to me

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)

- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island

Methods of Assessments/Evaluation:

- Math XL
- Study Island
- Do Nows/Warm Ups
- Exit Slips
- Journals
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Resources/Including Online Resources

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- Teacher Webpage
- Sixth Grade Textbook by Holt McDougal
- Big Ideas Textbook by Holt McDougal
 - Math XL program
 - <https://www.khanacademy.org/>
- Online Games:
 - <http://www.studyisland.com/web/index/>
 - <http://nces.ed.gov/nceskids/createagraph/default.aspx>

Topic/Unit: VII – Proportional Relationships

Approximate # Of Weeks: 4

Essential Questions:

How could you use proportional reasoning to solve rate and ratio problems?

How are ratios and rates connected?

How could you use tables to determine whether quantities are in equivalent ratios?

How could you use multiplication and division to solve problems involving equivalent ratios and rates?

How can you represent ratios and percents with concrete models, fractions, and decimals?

In what type of contexts could you use ratios?

New Jersey Student Learning Standards for mathematics:

6.RP.1

6.RP.2

6.RP.3

6.RP.3a

6.RP.3b

6.RP.3c

6.NS.6c

6.RP.6

Upon completion of this unit students will be able to:

- Write ratios and rates
- Find unit rates
- Use a table to find equivalent ratios and rates
- Graph ordered pairs on a coordinate grid
- Graph equivalent ratios on the coordinate plane
- Write and solve proportions
- Write percents as decimals and as fractions
- Write decimals and fractions as percents
- Find the percent of a number
- Solve problems involving percents

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Write ratios and rates and find unit rates (Holt McDougal)
- Activity – Use a table to find equivalent ratios and rates (Holt McDougal)
- Activity – Graph ordered pairs on a coordinate grid (Holt McDougal)
- Extension Activity- Graph equivalent ratios on the coordinate plane (Holt McDougal)
- Hands On Lab Activity- Use counters to model equivalent ratios (Holt McDougal)
- Activity – Write and solve proportions (Holt McDougal)
- Hands On Lab Activity- Use a 10-by-10 grid to model a percent (Holt McDougal)
- Activity – Write percents as decimals and fractions (Holt McDougal)
- Activity – Write decimals and fractions as percents (Holt McDougal)
- Activity – Find the percent of a number (Holt McDougal)
- Activity – Solve problems involving percents (Holt McDougal)
- Game Activity- The Golden Rectangle (Holt McDougal)

- Project Activity- Double door fractions, decimals, and percents (Holt McDougal)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island

Methods of Assessments/Evaluation:

- Math XL
- Study Island
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- Homework
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- Unit Project
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- Online Games:
- Math XL program
- <https://www.khanacademy.org/>
- <http://www.studyisland.com/web/index/>
- <http://www.aaamath.com/equ.htm>
- <http://www.xpmath.com/index.php>

Topic/Unit: VIII – Measurement and Geometry

Approximate # Of Weeks: 4

Essential Questions:

How can you recognize different characteristics of geometric representations, including special triangles and quadrilaterals that you see in your surroundings?

How do you analyze shapes in your world?

How could you use fractions and decimals to solve measurement problems?

How could you solve problems that involve lengths, areas, and volumes?

How and when do we utilize measurement?

What kind of shapes/polygons will cover a flat surface?

What properties do polygons have in common?

How do simple polygons work together to make more complex shapes?

How can angle measures be estimated?
How much accuracy is needed in measuring angles?

New Jersey Student Learning Standards for mathematics:

6.RP.3d
6.EE.2c
6.G.1
6.G.2
6.G.3

Upon completion of this unit students will be able to:

- Convert customary units of measure
- Convert metric units of measure
- Estimate and the area of irregular figures
- Find the area of rectangles
- Find the area of parallelograms
- Find the area of triangles
- Find the area of trapezoids
- Use models to discover the relationships between perimeters and areas
- Break polygons into simpler parts to find its area
- Estimate and find the volume of rectangular prisms using fractional side lengths
- Estimate and find the volume of triangular prisms
- Use a net to build a three-dimensional figure
- Find the surface area of prisms
- Find the surface area of pyramids
- Find the surface area of cylinders

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Convert custom units of measure (Holt McDougal)
- Activity – Convert metric units of measure (Holt McDougal)
- Activity – Estimate the area of irregular figures and find the area of rectangles and parallelograms (Holt McDougal)

- Hands On Lab Activity- Use grid paper to discover the relationship between the area of a square and its side length (Holt McDougal)
- Activity – Find the area of triangles and trapezoids (Holt McDougal)
- Hands On Lab Activity- Use geometry software to explore area (Holt McDougal)
- Activity – Break a polygon into simpler parts to find its area (Holt McDougal)
- Hands On Lab Activity- Use centimeter cubes to explore the volume of prisms (Holt McDougal)
- Activity – Estimate and find the volumes of rectangular prisms and triangular prisms (Holt McDougal)
- Hands On Lab Activity- Use a net to build a three dimensional figure (Holt McDougal)
- Activity – Find the surface area for three dimensional shapes (Holt McDougal)
- Game Activity- Polygon Hide and Seek (Holt McDougal)
- Project Activity- Area and volume Suitcase (Holt McDougal)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island

Methods of Assessments/Evaluation:

- Math XL
- Study Island
- Do Nows/Warm Ups
- Exit Slips
- Journals
- Check it Out! Problems (questions during lecture)
- Homework
- Quizzes
- Chapter Test
- Unit Project
- Alternative Assessment
- White Boards
- Thumbs Up/Thumbs Down
- Self-Assessments (Math Units)
- 3*2*1
- Classwork
- Online Quiz
- World Word Problems
- Find the Mistake

- Webpage
- Calculators
- Math/CS-Related Software
- Daily warm-ups

Resources/Including Online Resources

- Online Textbook Information: my.hrw.com
- Teacher Webpage
- Sixth Grade Textbook by Holt McDougal
- Big Ideas Textbook by Holt McDougal
- Math XL program
- <https://www.khanacademy.org/>
-
- Online Games/Tools:
- <http://www.studyisland.com/web/index/>
- <http://www.aaamath.com/equ.htm>
- <http://www.goldenumber.net/>

Topic/Unit: IX – Integers and the Coordinate Plane

Approximate # Of Weeks: 3-4

Essential Questions:

How can we use negative numbers in everyday contexts?

How could you use integers to represent real-life situations?

How can we use drawings and transformations on the coordinate plane to answer questions?

New Jersey Student Learning Standards for mathematics:

- 6.G.3
- 6.NS.5
- 6.NS.6
- 6.NS.6a
- 6.NS.6b
- 6.NS.6c
- 6.NS.7
- 6.NS.7a
- 6.NS.7b
- 6.NS.7c
- 6.NS.7d

6.NS.8

Upon completion of this unit students will be able to:

- Identify integers
- Graph integers and find opposites
- Compare and order integers
- Compare and order negative rational numbers
- Locate and graph points on a coordinate plane
- Identify the four quadrants on a coordinate plane
- Identify the x axis
- Identify the y axis
- Draw polygons in the coordinate plane
- Calculate the lengths of sides of polygons in the coordinate plane

Interdisciplinary Standards (njcccs.org)

- Standard 5.1 – Science Practices
- Standard 6.1 – U.S. History: America in the World
- Standard 6.3 – Active Citizenship in the 21st Century
- Standard 8.2 – Technology Education
- Standard 9.1 – 21st - Century Life & Career Skills

Activities – include 21st Century Technologies:

- Video Tutors (Holt McDougal website)
- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Identify and graph integers and find opposites (Holt McDougal)
- Activity – Compare and order integers (Holt McDougal)
- Extension Activity- Compare and order negative rational numbers (Holt McDougal)
- Activity – Locate and graph points on the coordinate plane (Holt McDougal)
- Activity – Draw polygons in the coordinate plane and find the lengths of their sides (Holt McDougal)
- Activity – Use translations, reflections, and rotations to change positions of figures in the coordinate plane (Holt McDougal)
- Game Activity- A Math riddle (Holt McDougal)
- Game Activity- Battle ship on the coordinate plane (Holt McDougal)
- Project Activity- Positive-Negative Pull-Out(Holt McDougal)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
- Taking Math Deeper Problems (Big Ideas)
- Math XL program
- Khan Academy
- Study Island

Methods of Assessments/Evaluation:

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Resources/Including Online Resources

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- <https://www.khanacademy.org/>
- Online Games/Tools:
- <http://www.studyisland.com/web/index/>
- <http://www.aaamath.com/equ.htm>

- <http://www.xpmath.com/index.php>

Topic/Unit: X – Functions

Approximate # Of Weeks: 2-3

Essential Questions:

What is the importance of predictable patterns?

What is the best way to represent a function?

How do functions show that different values are related?

How can you write inequalities to describe certain situations?

How can you use equations to describe relationships shown in a table?

New Jersey Student Learning Standards for mathematics:

6.EE.2c

6.G.1

6.EE.9

6.RP.3

6.EE.8

Upon completion of this unit students will be able to:

- Use data in a table to write an equation for a function and use the equation to find a missing value
- Represent and analyze relationships between independent and independent variables.
- Represent linear functions using ordered pairs and graphs
- Identify independent and dependent variables in a real- world situation
- Find the rates of change
- Find Slope
- Read and write inequalities
- Graph inequalities on a number line
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Interdisciplinary Standards (njcccs.org)

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- Standard 8.2 – Technology Education
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Activities – include 21st Century Technologies:

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- Interactivities (Holt McDougal website)
- Lesson Activities (Holt McDougal website)
- Lesson Quizzes (Holt McDougal website)
- Homework Help (Holt McDougal website)
- Chapter Project (Holt McDougal website)
- Activity – Use data in a table to write an equation for a function and use the equation to find a missing value (Holt McDougal)
- Activity – Represent linear functions using ordered pairs and graphs (Holt McDougal)
- Extension Activity- Identify the independent and dependent variables in a real world situation (Holt McDougal)
- Activity – Find rates of change and slope (Holt McDougal)
- Activity – Read and write inequalities and graph them on a number line (Holt McDougal)
- Game Activity- Try Angles(Holt McDougal)
- Project Activity- Picture Envelopes (Holt McDougal)

Enrichment Activities:

- Practice C Worksheets (Holt McDougal)
- Challenge Worksheets (Holt McDougal)
- Problem Solving Worksheets (Holt McDougal)
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