

Planned Course Guide

Title of planned course: 7th Grade Math

Subject Area: Mathematics

Grade Level: 7th

Course Description: *Prerequisites: Complete 6th grade math.* The course is the study of proportional relationships, ratios, rational number operations, writing and solving multi-step expressions, equations, and inequalities; applying and solving for percents, probability, data analysis, geometric figures, and linear functions. Students will gain the opportunity to cultivate positive mathematical practices including problem-solving skills and the ability to reason through the implementation of lessons, instruction, and assessments aligned with the Pennsylvania Common Core Standards, real life applications, and the integration of technology.

Time/Credit for this Course: 1.0

Curriculum Writing Committee: Madison Pope

Curriculum Map

August:

- Proportional Relationships- Ratios and Unit Rates

September:

- Proportional Relationships-Scale Drawings
- Percents with Proportions
- Percent Applications (Percent Equation)

October:

- Rational Number Operations
- Equations and Inequalities

November:

- Equations and Inequalities (cont.)
- Application of Equations to Find Angle Measures

December:

- Angle Measures and Angle Relationships

January:

- Angle Relationships (cont.)
- Angles in Triangles

February:

- Circles- Circumference & Area
- Volume and Surface Area of Polygons

March:

- Volume and Surface Area of Polygons (cont.)
- Data Analysis: Sampling and Statistics

April:

- Data Analysis: Sampling and Statistics (cont)
- Probability, Predictions, and Proportions

May:

- Probability, Predictions, and Proportions (cont)
- Mixed Review of 7th Grade Math Concepts

June:

- Mixed Review of 7th Grade Math Concepts
- Introduction to Linear Functions

Planned Course Materials

Course Title: 7th Grade Math

Textbook:

HMH into Math
Houghton Mifflin Harcourt Publishing Company
2020
Volume 1 and Volume 2
www.hmhco.com

Supplemental Books:

Pre-Algebra
Larson/Houghton Mifflin © 2012

HMH into Math: Differentiated Instruction
Houghton Mifflin Harcourt Publishing Company
2020

Common Core Progress Mathematics Grade 7
William H. Sadlier Inc.
2014

Teacher Resources:

- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 1: Proportional Relationships

- Ratios and Unit Rates
- Scale and Scale Drawings
- Percents
- Application of Percents

Time frame: 6 weeks

State Standard(s): CC.2.1.7.D.1 → Analyze proportional relationships and use them to model and solve real-world and mathematical problems.

Anchor(s) or adopted anchor: M07.A-R.1.1.1, M07.A-R.1.1.2, M07.A-R.1.1.3, M07.A-R.1.1.4, M07.A-R.1.1.5

Essential content/objectives: At end of the unit, students will be able to:

- Find ratios and unit rates
- Calculate unit rates
- Identify proportional and nonproportional relationships
- Write and solve proportions
- Use proportions to solve problems
- Use proportions to estimate populations
- Solve problems by drawing a diagram
- Solve problems involving scale drawings
- Identify similar and congruent figures
- Solve problems involving similar figures
- Use proportions to calculate simple percentages

Core Activities: Students will complete/participate in the following:

- Module 1: Identify and Represent Proportional Relationships (student workbook pg. 1-54)
 - Lesson 1: Explore Relationships
 - Small group and center options (teacher manual pg 5C)
 - Students identify the constant of proportionality using graphs, tables, and equations, diagrams, and verbal descriptions
 - Lesson 2: Recognize Proportional Relationships in Tables
 - Small group and center options (teacher manual pg 11C)
 - Play games to determine if relationships represented in a table are proportional
 - Lesson 3: Compute Unit Rates Involving Fractions
 - Small group and center options (teacher manual pg 19C)
 - Students compute unit rates using complex numbers and fractions
 - Lesson 4: STEM Lesson: Compute Unit Rates Involving Fractions
 - Small group and center options (teacher manual pg 19C)
 - Students complete the STEM lesson on computing unit rates from of different densities involving decimal quantities
 - Students use quantitative reasoning to compare the strengths of two sports drinks using unit rates
 - Students compute unit rates using complex numbers and fractions
 - Lesson 5 : Recognize Proportional Relationships in Graphs

- Small group and center options (teacher manual pg 27C)
- Students explain what a point (x,y) on the graph of a proportional relationship means in terms of the situation, with close attention to $(1, r)$ where r is the unit rate (use graph paper to create proportional relationships and recognize the relationship and $(1, r)$, the unit rate)
- Lesson 6 : Use Proportional Relationships to Solve Rate Problems
 - Small group and center options (teacher manual pg 35C)
 - Students use proportional relationships to solve multi-step ratio and percent problems
- Lesson 7: Practice Proportional Reasoning with Scale Drawings
 - Small group and center options (teacher manual pg 43C)
 - Game: Proportional or Not Proportional
 - Research Online Floor Plan Activity: Scale Drawings and using Proportions
 - Project: Are We Similar Class Project/Presentation
- Module 2: Proportional Reasoning with Percents (student workbook pg.55 -96)
 - Lesson 1: Percent Change
 - Students will use proportional relationships to solve multi-step ratio and percent problems
 - Students use proportional reasoning to calculate percent increase or decrease.
 - Small group and center options (teacher manual pg 55C)
 - Lesson 2: Markups and Discounts
 - Small group and center options (teacher manual pg 63C)
 - Understand rewriting an expression in different forms in a problems can show how quantities are related
 - Lesson 3: Taxes and Gratuities
 - Small group and center options (teacher manual pg 71C)
 - Interactive Challenge 2.3- Differentiated Textbook pg. 22
 - Dice and index card percent game to calculate different percentages of tips and taxes
 - Lesson 4: Commissions and Fees
 - Small group and center options (teacher manual pg 79C)
 - Lesson 5: Simple Interest
 - Small group and center options (teacher manual pg 87C)
 - Simple Interest Saving Challenge 2.4- Differentiated Textbook pg. 28
- Pre-Algebra 7th Grade Holt Textbook - Extension Lessons Chapter 8 (teacher handbook pg. 416-443)
 - Lesson 1: Estimation with Percents
 - Students will use proportional relationships to solve multi-step ratio and percent problems
 - Students use proportional reasoning to calculate percent increase or decrease
 - Lesson 2: Application of Percents
 - Students use strategies to solve multi-step percent problems
 - Students will formulate formulas and equations to solve for each complex scenario involving fractions, percents, unit rates, and applications of the percent formula
 - Lesson 3: Compound Interest
 - Students will learn how to apply their knowledge of percents and simple interest to calculate compound interest
 - Students will complete percent puzzlers and percent tiles

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7 Modules 1 and 2 - pages: 1-30
- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- specifically unit rates and unit rates with fractions
 - Utilize study island assignments- specifically practicing scale and scale drawings
 - Utilize study island assignments- specifically focusing on percentages and percent applications
 - Use Mobymax assignments and assessments grade 8
 - Teacher-generated edpuzzle videos
 - Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships' skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (graph paper for scale drawings, online shopping generator with percents, discounts and markups)
- Additional small-group instruction (flip chart lessons from book Volume 1: Unit 1: Modules 1-2)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with numbers
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7

Volume 1: Modules 1-2 pages: 1-96

- Module 1: Identify and Represent Proportional Relationships
- Module 2: Proportional Reasoning with Percents
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7 Modules 1 and 2
- Pre-Algebra Holt Text: Chapter 8 Application of Percents
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources
- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 2: Rational Number Operations

- Add and subtract integers and rational numbers
- Multiply and subtract integers and rational numbers
- Exponent properties and square roots
- Real numbers- irrational vs rational values

Time frame: 5 weeks

State Standard(s): CC.2.1.7.E.1 → Apply and extend previous understandings of operations with fractions to operations with rational numbers.

Anchor(s) or adopted anchor: M07.A-N.1.1.1. M07.A-N.1.1.2 M07.A-N.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Find the absolute value of the integer
- Read and write integers
- Graph points on a coordinate plane
- Represent addition and subtraction on a horizontal or vertical number line
- Apply properties of operations to add and subtract integers
- Apply properties of operations to multiply and divide integers
- Convert a rational number to decimal using long division
- Solve real-world and mathematical problems involving the four operations with rational numbers
- Solve multi-step real-life and mathematical problems by posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals)
- Apply exponent rules to integers and other operations
- Find and understand the square root of numbers

Core Activities: Students will complete/participate in the following:

- Module 3: Understand Addition and Subtraction of Rational Numbers (student workbook pg. 96-126)
 - Lesson 1: Add and Subtract a Positive Integer on a Number Line
 - Small group and center options (teacher manual pg 101C)
 - Students will understand how positive and negative values are equidistance on a numberline
 - Students will show how the sum of a number and its opposite have a sum of zero, understanding additive inverses
 - Lesson 2: Add or Subtract a Negative Integer on a Number Line
 - Small group and center options (teacher manual pg 109C)
 - Apply and extend on previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line
 - Lesson 3: Use a Number Line to Add or Subtract Rational Numbers
 - Small group and center options (teacher manual pg 117C)
 - Students describe situations in which opposite quantities combine to zero
- Module 4: Add and Subtract Rational Numbers (student workbook pg. 127-162)
 - Lesson 1: Compute Sums of Integers

- Students will primarily focus on ways to solve problems with negative integers and positive integers by adding numbers on a number line horizontally and vertically
 - Small group and center options (teacher manual pg. 129C)
- Lesson 2: Compute Differences of Integers
 - Small group and center options (teacher manual pg 137C)
 - Students will primarily focus on ways to solve problems with negative integers and positive integers by subtracting numbers on a number line horizontally and vertically
- Lesson 3: Compute Sums and Differences of Rational Numbers
 - Small group and center options (teacher manual pg 145C)
 - Interactive Challenge 4.3- Differentiated Textbook pg. 42
 - Students will practice solving multi-step problems using addition and subtraction rules and properties of operations
 - Students will utilize a number line to subtract positive and negative integers in real-life application word problem scenarios
- Lesson 4: Apply Properties to Multi-step Addition and Subtraction Problems
 - Small group and center options (teacher manual pg 153C)
 - Apply properties of operations as strategies to add or subtract rational numbers
- Module 5: Multiply and Divide Rational Numbers (student workbook pg. 163-194)
 - Lesson 1: Explore Relationships
 - Small group and center options (teacher manual pg 165C)
 - Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations- Example: $(-1)(-1) = 1$
 - Students interpret products of rational numbers by describing real-world contexts.
 - Lesson 2: Multiply Rational Numbers
 - Small group and center options (teacher manual pg 173C)
 - Students will understand and apply operations and properties of multiplication with rational numbers
 - Lesson 3: Write Fractions as Decimals and Divide Integers
 - Small group and center options (teacher manual pg 179C)
 - Students will convert a fraction to a decimal using long division
 - Students will recognize that a quotient of integers is a rational number,
 - Students will understand that a rational number a decimal form that terminates or repeats
 - Lesson 4 : Multiply and Divide Rational Numbers in Context
 - Small group and center options (teacher manual pg 187C)
 - Use products and quotients of rational numbers to solve problems
- Module 6: Solve Multi-step Problems Using Rational Numbers (student workbook pg. 195-218)
 - Lesson 1: Apply Properties and Strategies to Operate with Rational Numbers
 - Students apply properties of operations as strategies to multiply and divide rational numbers
 - Students solve real-world problems involving the strategic use of mathematical operations on rational numbers
 - Small group and center options (teacher manual pg 197C)
 - Lesson 2: Estimate to Check Reasonableness
 - Small group and center options (teacher manual pg 203C)
 - Decide whether a problem calls for an estimate or exact value
 - Apply a variety of of estimation strategies to check reasonableness of answers to

real-world problems

- Lesson 3: Solve Multi-step Problems with Rational Numbers in Context
 - Small group and center options (teacher manual pg 209C)
 - Interactive Challenge 6.3- Differentiated Textbook pg. 62
 - Students will assess the reasonableness of solutions to problems involving rational numbers
 - Students will learn to solve multi-step problems with positive and negative rational numbers
- Pre-Algebra 7th Grade Holt Textbook - Extension Lessons
 - Chapter 2 (teacher handbook pg. 84-92)
 - Lesson 1: Properties of Exponents
 - Students will learn basic properties of exponents and apply them simplifying expressions
 - Students will examine patterns in integer exponents to problem solve
 - Chapter 3 ((teacher handbook pg.146- 156)
 - Lesson 1: Square and Square Roots
 - Students will find basic square roots using a calculator
 - Lesson 2: Finding Square Roots
 - Students will find the positive and negative square roots of a number
 - Students estimate square roots to a given number of decimal and solve problems using square roots
 - Students will learn how to calculate the square root of without using a calculator
 - Explore Cube and Cube Roots Lab Activity- Enrichment (teacher manuel pg. 154)
 - Lesson 3: The Real Numbers
 - Students will determine if a number is rational or irrational
 - Students will understand that all whole numbers are rational numbers, and thus cannot be irrational
 - Students practice identifying irrational numbers and rational numbers

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7
Modules 3-6 - pages: 31-63
- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- specifically adding and subtracting rational numbers
 - Utilize study island assignments- specifically multiplying and dividing rational numbers
 - Utilize study island assignments- specifically focusing on solving problems with the four operations using whole numbers, decimals, fractions, and negatives.
 - Teacher-generated edpuzzle videos
 - Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships' skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (graph paper for negative and positive integer comparative, online exercises for solving four mathematical operations with positive and negative numbers as well as positive and negative rational numbers)
- Integration of manipulatives: online and in person games to examine numbers and classify

them as rational or irrational and real

- Additional small-group instruction (flip chart lessons from book Volume 1: Unit 2: Modules 3-6)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with more complex numbers as well as rational numbers
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7
Volume 1: Modules 3-6 pages: 97- 218
 - Module 3: Understand Addition and Subtraction of Rational Numbers
 - Module 4: Add and Subtract Rational Numbers
 - Module 5: Multiply and Divide Rational Numbers
 - Module 6: Solve Multi-step Problems Using Rational Numbers
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7 Modules 3-6
- Pre-Algebra Holt Text: Chapter 2-3
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org

- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources
- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 3: Expressions, Equations, and Inequalities

- Simplify and evaluate expressions
- Write and solve one and two-step equations
- Write and solve one and two-step inequalities
- Solve multi-step equations and inequalities
- Solve multi-step equations with variables on both sides of the equations

Time frame: 5 weeks

State Standards:

- CC.2.2.7.B.1 → Apply properties of operations to generate equivalent expressions.
- CC.2.2.7.B.3 → Model and solve real-world and mathematical problems by using and connecting numerical, algebraic, and/or graphical representations.

Anchor(s) or adopted anchor: M07.B-E.1.1.1, M07.B-E.2.1.1, M07.B-E.2.2.2, M07.B-E.2.3.1

Essential content/objectives: At end of the unit, students will be able to:

- Write and solve one step equations
- Write and solve two step equations
- Write and solve problems using inequalities
- Write and solve one step inequalities
- Write and solve two step inequalities
- Use the Distributive Property to write equivalent expressions
- Write linear expressions in different forms
- Use variables to write expressions, equations and inequalities
- Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems
- Solve equations with variables on both sides
- Write and solve multi-step equations
- Solve real-world problems by using multistep equations
- State and use symbols of inequality
- Write inequalities to represent real-world situations
- Solve inequalities using addition or subtraction
- Solve inequalities using multiplication or division
- Solve multi-step inequalities
- Write multi-step inequalities to represent real-world situations

Core Activities: Students will complete/participate in the following:

- Module 7: Solve Problems Using Expressions and Equations (student workbook pg. 221-260)
 - Lesson 1: Write Linear Expressions in Different Forms for Situations
 - Small group and center options (teacher manual pg 223C)
 - Students understand that rewriting an expression in different ways or forms in context can show how quantities are related
 - Students identify parts of an expression including factors, variables, and exponents
 - Lesson 2: Add, Subtract, and Factor Linear Expressions with Rational Coefficients
 - Small group and center options (teacher manual pg 229C)

- Students will apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients
- Students will apply the commutative, associate, and distributive property to write and evaluate expressions
- Lesson 3: Write One-Step and Two-Step Equations for Situations
 - Small group and center options (teacher manual pg 237C)
 - Students build upon the previous skill of writing expressions to include the equation form: $px + q = r$
 - Students will use variables to represent quantities in real-world situations and construct equations
 - Students will compare and contrast the differences between expressions and equations
- Lesson 4 : Apply One-Step and Two-Step Equations to Solve Real-World Problems
 - Small group and center options (teacher manual pg 243C)
 - Students will write and solve real world situations using an equation
 - Students will write and solve one-step equations
 - Students will write and solve two-step equations
- Module 8: Solve Problems Using Inequalities (student workbook pg. 261-288)
 - Lesson 1: Understand and Apply Properties to Solve One-Step Inequalities
 - Students will learn to solve one-step inequalities for real-world problems
 - Students will graph the solution set for solved inequalities
 - Small group and center options (teacher manual pg 263C)
 - Lesson 2: Write Two-Step Inequalities for Situations
 - Small group and center options (teacher manual pg 271C)
 - Use the language of of greater than, less than, greater than or equal to, less than or equal to and apply to solve and graph each inequality problem
 - Write inequalities but to not solve them, be able to write inequalities to represent situations
 - Students will use variables to represent quantities in a real-world or mathematical problem, and construct inequalities to solve problems by reasoning about the quantities
 - Lesson 3: Apply One-Step and Two-Step Inequalities to Solve Problems
 - Small group and center options (teacher manual pg 279C)
 - Students will write and solve inequalities in the traditional form Example: $px + q > r$ or $q < r$, where p, q , and r are rational numbers
 - Students will graph the solution sets of inequalities and interpret them in the context of the problem
- Pre-Algebra 7th Grade Holt Textbook - Extension Lessons
Chapter 10: More Inequalities (teacher handbook pg. 498-537)
 - Lesson 1: Solving Multi-Step Equations
 - Students will learn to solve multi-step equations by using the distributive property, simplifying and combining like terms to isolate the variable
 - Students represent equations with tiles and simplify and solve each visual tile equation
 - Lesson 2: Solving Equations with Variables on Both Sides
 - Students learn and solve for variables on both sides of the equal sign in the equation
 - Students review coefficients and factors for combining like terms to manipulate the equation so that the variables result on only one side of the equation
 - Students represent equations with tiles and simplify and solve each visual tile equation moving the variable with like terms

- Lesson 3: Solving Multi-Step Inequalities
 - Students will write and solve multi-step inequalities in the traditional form
Example: $px + q > r$ or $q < r$, where p, q , and r are rational numbers
 - Students will graph the solution sets of inequalities and interpret them in the context of the problem for multi-step situations
- Lesson 4: Systems of Equations
 - Students will find and solve systems of equations where two variables are represented in two equations
 - Students will understand solutions of systems of equations and how the solutions can and should be written as ordered pairs, such of that from a graph

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7 Modules 7-8 pages: 65-82
- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- specifically writing expressions and comparing expressions to equations
 - Utilize study island assignments- specifically focusing on writing and solving one-step equations and inequalities
 - Utilize study island assignments- specifically focusing on writing and solving two-step equations and inequalities
 - Utilize study island assignments- specifically focusing on using a variable to generate equations and inequalities from real-world scenarios
 - Utilize study island assignments- specifically solving variables on both sides of the equal sign
 - Utilize study island assignments- specifically focusing systems on equations
 - Teacher-generated edpuzzle videos
 - Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships' skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (graph paper for writing and solving expressions, equations, and inequalities; also used to graph one and two-step inequalities)
- Additional small-group instruction (flip chart lessons from book Volume 1: Unit 3: Modules 7-8)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with more complex numbers as well as rational numbers
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills

- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7
Volume 1: Modules 7-8 pages: 221-288
 - Module 7: Solve Problems Using Expressions and Equations
 - Module 8: Solve Problems Using Inequalities
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7
Modules 7-8
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques

- Activities and worksheets
- Online resources
- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 4: Geometry: Angle Relationships and Triangles

- Supplementary and complementary angles
- Parallel and perpendicular lines
- Angle Relationships; Alternate Ext./Int., Same-Side, Vertical, or Congruent Angles
- Solving missing angles using multi-step equations
- Triangle classification and Triangle Inequality Theorem
- Transformations and symmetry in figures

Time frame: 4 weeks

State Standards:

CC.2.3.7.A.2 → Visualize and represent geometric figures and describe the relationships between them.

CC.2.3.7.A.1 → Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume

Anchor(s) or adopted anchor: M07.C-G.2.1.1 M07.C-G.2.1.2 M07.C-G.1.1.1 M07.C-G.1.1.2 M07.C-G.1.1.3

Essential content/objectives: At end of the unit, students will be able to:

- Compare and contrast supplementary angles and complementary angles
- Identify complementary and supplementary angles in a triangle and write an equation
- Solve for the unknown angle using an equation identifying the angles as supplementary and complementary
- Use two-step and one-step equations to solve missing angles
- Classify triangles by sides and angles
- Solve problems involving triangles
- Use and apply the triangle inequality theorem
- State and Identify special pairs of angles
- Identify angles when a transversal intersects lines
- Find the measure of missing angles using special angle pairs

Core Activities: Students will complete/participate in the following:

- Module 7: Solve Problems Using Expressions and Equations (student workbook pg. 221-260)
 - Lesson 1: Classify Angles and Angle Relationships
 - Students will identify and describe pairs of angles that are supplementary, complementary, vertical, and adjacent
 - Students will practice classifying these pairs of angles
 - Lesson 2: Apply Two-Step Equations to Find Angle Measures
 - Small group and center options (teacher manual pg 251C)

- Students will identify angle relationships in geometric figures
- Students will apply angle relationships to write equations in one variable to find unknown angle measures

- Lesson 3: Apply Two-Step Equations to Find Angle Measures in Triangles
 - Students will use angle relationships and pairs to solve unknown angles in triangles
 - Students will use triangles to solve complementary angles and supplementary angles
 - Students will apply angle relationships to write equations in one variable to find unknown angles
- Lesson 4 : Angle Relationships Cut By Transversal
 - Students will write and solve equations to solve the missing angles
 - Students will identify angle relationships such as Alternate Angles, Same Side Angles, and Corresponding Angles
 - Students will use language such as congruent and supplementary to describe angles created by the parallel lines cut by the transversal
 - Students will apply angle relationships to write equations in one variable to find unknown angles
- Module 9: Draw and Analyze Two-Dimensional Figures
 - Lesson 1: Draw and Construct Triangles Given Side Lengths
 - Small group and center options (teacher manual pg 301C)
 - Students will construct triangles and classify the triangles based on their sides and angles
 - Students will construct triangles and write inequalities by applying the triangle inequality theorem
 - Students will analyze whether no triangle, one triangle or many triangles can be made from three side lengths
 - Lesson 2: Draw and Construct Triangles Given Angle Measures
 - Small group and center options (teacher manual pg 309C)
 - Students determine if they can construct a triangle or not given certain angles
- Pre-Algebra 7th Grade Holt Textbook - Extension Lessons
Chapter 5: Plane Figures and Pattern in Geometry (teacher handbook pg. 222-277)
 - Lesson 1: Congruence
 - Students will use properties of congruent figures to solve problems
 - Students explore congruent angles and apply these angles to compare congruent triangles and other figures/shapes
 - Lesson 2: Transformations
 - Students identify symmetry in figures
 - Students will learn point symmetry and how its applied in shapes
 - Students learn the points of center of rotations
 - Lesson 3: Symmetry
 - Students identify symmetry in figures
 - Students will learn point symmetry and how its applied in shapes
 - Students learn the points of center of rotations

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7
Modules 7 & Module 9 pages: 83-87

- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- specifically classifying angle pairs and triangles
 - Utilize study island assignments- solving equations using complementary and supplementary angles
 - Utilize study island assignments- specifically writing and solving equations for supplementary angles
 - Utilize study island assignments- specifically solving missing angles in a triangle
 - Desmos: Angle Relationships Interactive- Parallel Lines and Transversal
 - Teacher-generated edpuzzle videos
 - Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships' skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (graph paper for creating triangle inequality theorem, online games and interactive activities comparing, classifying, and solving supplementary and complementary angles)
- Integration of manipulatives (online activities and practice with triangle classification and missing angle real-world scenarios)
- Integration of manipulatives(graph paper for graphing and drawing the angle relationships in the parallel lines cut by the transversal)
- Integration of manipulatives (kits used to see transformations of shapes and identify the type of transformations)
- Additional small-group instruction (flip chart lessons from book Volume 1: Unit 4: Modules 7& 9)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with more complex numbers as well as rational numbers
- Chapter review exercises which revisits concepts and vocabulary
- Teacher/peer tutoring
- Online practice

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts

- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7
Volume 1: Modules 7 and 9 pages: 221-288
 - Module 7: Solve Problems Using Expressions and Equations
 - Module 9: Draw and Analyze Two-Dimensional Figures
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7
Modules 7 and 9
- Pre-Algebra 7th Grade Holt Textbook
Chapter 5: Plane Figures and Pattern in Geometry (teacher handbook pg. 222-277)
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards
- Desmos
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources
- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 5: Geometry: Volume and Surface Area

- Circumference and area of circles
- Areas of triangles and other figures
- Volume and surface area of two-dimensional figures
- Volume and surface area of three-dimensional figures

Time frame: 4 weeks

State Standards:

CC.2.3.7.A.1 Solve real-world and mathematical problems involving angle measure, area, surface area, circumference, and volume.

Anchor(s) or adopted anchor: M07.C-G.2.2.1, M07.C-G.2.2.2

Essential content/objectives: At end of the unit, students will be able to:

- Review and apply radius, diameter, and pi to constructing circles
- Draw circles and other geometric shapes
- Find circumference and area of circles
- Find areas of composite figures
- Describe and analyze cross sections of circular solids
- Find the surface area of prisms and cylinders
- Describe two-dimensional figures that result from slicing three-dimensional solids
- Find the volume of prisms and cylinders
- Derive and apply a formula for volume of prisms

Core Activities: Students will complete/participate in the following:

- Module 9: Draw and Analyze Two-Dimensional Figures (student handbook pg. 293-327)
 - Lesson 1: Draw Circles and Other Figures
 - Small group and center options (teacher manual pg 293C)
 - Students will construct and draw circles on paper and using technology with given conditions
 - Lesson 2: Review of Circles
 - Small group and center options (teacher manual pg 293C)
 - Students will review terms of radius, pi, diameter and apply these to write equations for circles
- Module 10: Analyze Figures to Find Circumference and Area (student handbook pg. 328-356)
 - Lesson 1: Derive and Apply Formulas for Circumferences
 - Small group and center options (teacher manual pg 327C)
 - Students solve multi-step real-life and mathematical problems involving the circumference of a circle

- Students will learn formulas for area and circumference and use them to solve problems; apply diameter, radius, and pi
- Lesson 2: Derive and Apply a Formula for the Area of a Circle
 - Small group and center options (teacher manual pg 333C)
 - Students will know the formulas for area and circumference of a circle and apply them in multi-step problems
 - Students will solve problems where they will find the area of a circle and use this to relate it to circumference of a circle
- Lesson 3: Describe and Analyze Cross Sections of Circular Solids
 - Small group and center options (teacher manual pg 341C)
 - Students will describe cross sections of circular solids that result in circles, rectangles, and triangles
 - Students will calculate and compare the areas and circumferences of cross sections
- Lesson 4: Area of Composite Figures
 - Small group and center options (teacher manual pg 349C)
 - Students will calculate the area of a composite figure by breaking it into its component figures and adding their areas and subtracting when necessary
 - Understand the relationship between the area of circle and a semi-circle
- Module 11: Analyze Surface Area and Volume (student handbook pg. 357-386)
 - Lesson 1: Describe and Analyze Cross Sections of Prisms and Pyramids
 - Small group and center options (teacher manual pg 359C)
 - Understand and describe the two-dimensional figures that result from slicing three dimensional figures, as in plane sections of prisms and pyramids
 - Students will recognize base shapes in the cross sections such as hexagons, squares, triangles, and pentagons
 - Students will compare cross sections from horizontal and vertical slices
 - Surface Area Challenge: Differentiated Textbook pg. 107 - Community Pool Renovations with Surface Area
 - Lesson 2: Derive and Apply Formulas for Surface Areas of Cubes and Right Prisms
 - Small group and center options (teacher manual pg 365C)
 - Students learn to calculate the surface area of right prisms
 - Students make connections between 2D and 3D figures through formulas of surface area and visuals of figures' surface area
 - Lesson 3: Derive an Apply a Formula for the Volume of a Right Prism
 - Small group and center options (teacher manual pg 371C)
 - Students will learn to calculate the volume of right prisms. Students will solve for the volume with a formula $V=Bh$.
 - Lesson 4: Solve Multi-Step Problems with Surface and Volume
 - Small group and center options (teacher manual pg 377C)
 - Students will use formulas of surface area and volume to solve multi-step problems involving both two-dimensional and three-dimensional figures
- Pre-Algebra Holt 7th Grade Textbook - Extension Lessons
 - Chapter 6- Two and Three-Dimensional Geometry
 - Lesson 1: Pythagorean Theorem
 - Students analyze right angles and see the relationships
 - Students will use triangles to solve problems using the pythagorean theorem
 - Lesson 2: Volume of Prisms and Cylinders
 - Students will find the volume of prisms and cylinders by taking the volume of composite figures

- Students will volume of prisms and cylinders by taking the volume using a formula
- Lesson 3: Volume of Pyramids and Cones
 - Students will find the volume of pyramids and cones by taking the volume of composite figures
 - Students will volume of pyramids and cones by taking the volume using a formula
- Lesson 4: Surface Area of Prisms and Cylinders
 - Students analyze right angles and see the relationships
 - Students will use triangles to solve problems using the pythagorean theorem
- Lesson 5: Surface Area of Pyramids and Cones
 - Students will find the volume of pyramids and cones by taking the volume of composite figures
 - Students will volume of pyramids and cones by taking the volume using a formula

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7 Modules 9-11 pages: 83-105
- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- specifically on Circles; solving for circumference and area
 - Utilize study island assignments- Volume of Geometric 2-Dimensional Shapes
 - Utilize study island assignments- Volume of Geometric 3-Dimensional Shapes
 - Utilize study island assignments- Surface Area of Geometric 2-Dimensional Shapes
 - Utilize study island assignments- Surface Area of Geometric 3-Dimensional Shapes
 - Teacher-generated edpuzzle videos
 - Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships' skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (graph paper and models for geometric shapes)
- Integration of manipulatives (online activities and practice volume and surface area of 2D and 3D shapes)
- Additional small-group instruction (flip chart lessons from book Volume 2: Unit 5: Modules 9-11)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with more complex numbers as well as rational numbers
- Chapter review exercises which revisits concepts and vocabulary

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion

- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7
Volume 2: Modules 9-11 pages: 327-389
 - Module 9: Draw and Analyze Two-Dimensional Figures
 - Module 10: Analyze Figures to Find Circumference and Area
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7
Modules 9-11
- Pre-Algebra Holt 7th Grade Textbook
Chapter 6- Two and Three-Dimensional Geometry
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards
- Desmos
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources

- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 6: Sampling and Data Analysis

- Sample Methods and Techniques
- Making Inferences from Populations
- Measures of Central Tendency
- Measures of Variation
- Analyzing Spreads of Data
- Compare Spreads of Data to Make Predictions
- Statistical Displays and Distribution

Time frame: 5 weeks

State Standards:

CC.2.4.7.B.1 → Draw inferences about populations based on random sampling concepts.
CC.2.4.7.B.2 → Draw informal comparative inferences about two populations.

Anchor(s) or adopted anchor: M07.D-S.1.1.1, M07.D-S.1.1.2 M07.D-S.2.1.1

Essential content/objectives: At end of the unit, students will be able to:

- Identify populations and sampling methods
- Make conclusions about populations using surveys
- Make inferences from a random sample with an unknown characteristic of interest and gauge the variations
- Compare two numerical data distributions using measures of center and variability
- Use statistical methods and graphs to compare data
- Use measures of center and variability for numerical data from random samples to draw comparative inferences about two populations
- Analyze and compare center and spread of data displayed in dot plots, and box plots
- Create dot and box plots to compare data over samples of a random population and use measures of center and variability

Core Activities: Students will complete/participate in the following:

- Module 12: Proportional Reasoning with Samples (student handbook pg. 389-414)
 - Lesson 1: Understand Representative Samples
 - Small group and center options (teacher manual pg 391C)

- Students will understand populations, random samples, and how to select a representative sample
 - Students will learn and understand the different ways that a sample can be biased
 - Students will describe samples as subset of population, and analyze samples to determine whether they are representative of a population
- Lesson 2: Make Inferences from a Random Sample
 - Small group and center options (teacher manual pg 397C)
 - Students use proportional reasoning to make inferences about a population as they study a sample
 - Students use a random sample to describe an inference about a population after setting up a proportion based on the population sample
- Lesson 3: Make Inferences from Repeated Random Samples
 - Small group and center options (teacher manual pg 405C)
 - Students use data from a random sample to draw inferences about the population with an unknown characteristic of interest
 - Students will analyze variation both visually and quantitatively in repeated random samples
 - Students will understand variation is the first step towards understanding statistical methods used to generate reliable inferences
 - Students use a repeated random sample to describe an inference about a population after setting up a proportion based on the population sample and accounting for variation
- Module 13: Use Statistics and Graphs to Compare Data(student handbook pg. 415-436)
 - Lesson 1: Compare Center and Spread of Data Displayed in Dot Plots
 - Small group and center options (teacher manual pg 415C)
 - Students identify the median, mean, and spread of data displayed in a dot plot
 - Students will closing analyze data using more than one measure, allowing students to identify different characters of the sets
 - Students will utilize google sheets to analyze data in dot plots
 - Challenge: 13.1- Sports on the Small Screen Differentiated Textbook pg. 116
 - Lesson 2: Compare Center and Spread of Data Displayed in Box Plots
 - Small group and center options (teacher manual pg 421C)
 - Students will compare characteristics of of data sets displayed in box plots
 - Students will draw inferences about two populations based on data displayed in box plots
 - Students will utilize google sheets to analyze data in box plots
- Pre-Algebra Holt 7th Grade Textbook - Extension Lessons
 - Chapter 4: Collecting, Displaying and Analyzing Data (teacher handbook pg. 174-219)
 - Lesson 1: Measures of Central Tendency
 - Students identify the median, mean, mode, range and spread of data displayed in a dot plot
 - Students will closing analyze data using more than one measure, allowing students to identify different characters of the sets
 - Students will utilize google sheets to analyze data in various forms
 - Lesson 2: Variability
 - Students will compare characteristics of of data sets displayed in box plots
 - Students will find measures of variability in data sets
 - Students will compare medians and ranges
 - Students will compare the differences between the first and third quartiles

- Lesson 3: Misleading Graphs and Statistics
 - Students will display and read data in graphs, histograms, and line graphs
 - Students will recognize misleading graphs and statistics
 - Students will explain why graphs are misleading in terms the data displayed
- Lesson 4: Scatter Plots
 - Students create and interpret scatter plots from given data on paper and using google sheets
 - Extension: Average Deviation- Students find the average deviation of a data set

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7 Modules 12-13 pages: 109-124
- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- specifically on understanding sampling and random populations
 - Utilize study island assignments- Making inferences from a Random Sample
 - Utilize study island assignments- To analyze box plots and dots and compare data of populations
 - Desmos: “Sample and Data Analysis-Introduction to Statistics”
 - Teacher-generated edpuzzle videos
 - Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships’ skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (graph paper to create spread of data in dot plots, box plots and graphs)
- Integration of manipulatives (online activities of data distributions)
- Additional small-group instruction (flip chart lessons from book Volume 2: Unit 6: Modules 12-13)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with more complex numbers as well as rational numbers
- Chapter review exercises which revisits concepts and vocabulary

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations

- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7
Volume 2: Modules 12-13 pages: 389-436
 - Module 12: Proportional Reasoning with Samples
 - Module 13: Use Statistics and Graphs to Compare Data
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7
Modules 12-13
- Pre-Algebra Holt 7th Grade Textbook
Chapter 4- Data Analysis
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards
- Desmos
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources
- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 7: Probability

- Theoretical Probability
- Experimental Probability
- Independent and Dependent Event (Simple and Compound)
- Make Predictions using Probability

Time frame: 4 weeks

State Standards:

CC.2.4.7.B.3 → Investigate chance processes and develop, use, and evaluate probability models.

Anchor(s) or adopted anchor: M07.D-S.3.1.1, M07.D-S.3.2.1 M07.D-S.3.2.2, M07.D-S.3.2.3

Essential content/objectives: At end of the unit, students will be able to:

- Find and describe the probability of a simple event
- Find the sample spaces and probabilities
- Use multiplication to count outcomes and find probabilities
- Find the probability of independent and dependent events
- Find and compare experimental and theoretical probabilities
- Investigate experimental probability by conducting a simulation
- Predict actions of a larger group by using a sample
- Understand the probability of chance is a number between 0 and 1 that expresses the likelihood of an event occurring
- Find probabilities of independent events
- Find probabilities of compound events

Core Activities: Students will complete/participate in the following:

- Module 14: Understand and Apply Experimental Probability (student handbook pg. 437-472)
 - Lesson 1: Understand Representative Samples
 - Small group and center options (teacher manual pg 441C)
 - Students will describe the likelihood of an event in terms of probability between 0 and 1
 - Students classify events as impossible, unlikely to occur, as likely to occur as not, likely to occur, or certain
 - Students will learn relevant terms including trial, outcome, event, and sample space to apply to their own experiments of events
 - Lesson 2: Find Experimental Probability of Simple Events
 - Small group and center options (teacher manual pg 447C)
 - Students find the experimental probability of an event and describe how to find the experimental probability of an event
 - Students will explain how to find the complement of an experimental probability
 - Students simulate experiments of different events with coins, cards, and dice
 - Lesson 3: Find Experimental Probability of Compound Events Introduction
 - Small group and center options (teacher manual pg 455C)
 - Students will determine the sample space for a compound event (introduction scenarios)
 - Students will understand the difference between simple and compound events in terms of probability

- Lesson 4: Use Experimental Probability and Proportional Reasoning to Make Predictions
 - Small group and center options (teacher manual pg 463C)
 - Students will use experimental probability and proportional reasoning to make predictions about real-world situations
 - Construct an Argument Activity- Predictions of Experimental Probability
- Module 15: Understand and Apply Theoretical Probability (student handbook pg.473-508)
 - Lesson 1: Find the Theoretical Probability of Simple Events
 - Small group and center options (teacher manual pg 475C)
 - Students will find theoretical probability of simple events and compare theoretical probability to experimental probability
 - Students will describe how the experimental probability is related to theoretical probability based on number of experiment trials
 - Lesson 2: Find Theoretical Probability of Compound Events
 - Small group and center options (teacher manual pg 483C)
 - Students find and compare theoretical probabilities of compound events using tables, diagrams, and lists
 - Lesson 3: Use Theoretical Probability and Proportional Reasoning to Make Predictions
 - Small group and center options (teacher manual pg 491C)
 - Students will determine theoretical probability and use it, along with proportional reasoning, to make predictions regarding outcomes of events
 - Students will analyze predictions for reasonableness in context
- Pre-Algebra Holt 7th Grade Textbook - Extension Lessons
Chapter 9: Probability (teacher handbook pg. 446-495)
 - Lesson 1: The Fundamental Counting Principle
 - Students find the number of possible outcomes in an experiment
 - Students use tree diagrams to organize objects to calculate probabilities
 - Lesson 2: Permutations and Combinations
 - Students will find factorials of numbers
 - Students will apply factorials to find permutations and combinations
 - Students will distinguish and identify the difference between finding permutations and combinations
 - Students will find permutations and combinations using a formula
 - Lesson 3: Independent and Dependent Events
 - Students find the probabilities of independent and dependent events
 - Students will explain that the probability of two or more events is the product of the individual probabilities

Extensions:

- Additional Textbook- HMH into Math Differentiated Instruction Grade 7
Modules 14-15 pages: 439-508
- Integrate technology for further exploration of mathematical concepts
 - Use Khan academy lesson videos
 - Utilize study island assignments- reviewing proportions and samples
 - Utilize study island assignments- specifically focus on probability key terms and outcomes
 - Utilize study island assignments- to specifically focus on making predictions of a simple event
 - Project: Coin Flip and Dice Probability Activity
 - Teacher-generated edpuzzle videos

- Use First in Math as a review a basic skills for current lesson
- Create and solve more challenging problems involving proportions
- Teacher generated practice for proportional relationships' skills (i.e. Google Docs, Google Slides, Desmos Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (dice, cards, and coins for theoretical and experimental probability)
- Integration of manipulatives (online activities of probability games and predictions)
- Additional small-group instruction (flip chart lessons from book Volume 2: Unit 7: Modules 14-15)
- Differentiated materials, assignments, and assessments
- Use more technology to assist in operations with more complex numbers as well as rational numbers
- Chapter review exercises which revisits concepts and vocabulary

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: HMH into Math Grade 7
Volume 2: Modules 14-15 pages: 437-508
 - Module 14: Understand and Apply Experimental Probability
 - Module 15: Understand and Apply Theoretical Probability
- Additional Textbook: HMH into Math Differentiated Instruction Grade 7
Modules 14-15
- Pre-Algebra Holt 7th Grade Textbook
Chapter 9: Probability (teacher handbook pg. 174-219)
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes

- Activity supplies
- Calculators
- Individual white boards
- Desmos
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources
- **Summative**
 - End-of-unit assessment and/or projects

Curriculum Scope & Sequence

Planned Course: 7th Grade Math

Unit 8: Mixed Review and Linear Functions

- Mixed review of 7th grade concepts and topics
- Compare Linear and Nonlinear functions
- Find the Slope of Line
- Find the x and y Intercepts to Graph Linear Functions

Time frame: 4 weeks

State Standards:

CC.2.2.8.C.1→ Define, evaluate, and compare functions.

CC.2.2.8.C.2→ Use concepts of functions to model relationships between quantities.

Anchor(s) or adopted anchor: , M08.B-F.1.1.1, M08.B-F.1.1.2, M08.B-F.1.1.3,

Essential content/objectives: At end of the unit, students will be able to:

- Use graphs to represent relations and functions
- Find solutions of equations in two variables
- Understand that functions can be linear or nonlinear
- Use x and y intercepts to graph linear equations
- Find and interpret slopes of lines

Core Activities: Students will complete/participate in the following:

- Using data gathered from previous assessments and benchmarks to individualize instruction and reteach 7th grade standards where proficiency has not been demonstrated
- Grade 7 Pre-Algebra Holt Textbook: Chapter 11: Linear Equations
 - Lesson 1: Graphing Linear Equations
 - Small group and center options
 - Complete tables to show non-linear functions compared to linear functions
 -
 - Lesson 2: Slope of Line
 - Small group and center options
 - Students learn how the variables are constantly change both horizontally and vertically
 - Students will calculate slopes and be introduced to new formulas to better understand relationships in the graph
 - Lesson 3: Linear Relationships
 - Students will learn and apply the direct variation
 - Students will graph inequalities with two variables
 - Students will determine and analyze the line of best fit

Extensions:

- Integrate technology for further exploration of mathematical concepts

- Use any digital resources previously listed that students need more practice with
- CK 12: Grade 8 Intro to Linear Functions
- CK 12: Grade 8 Basic Math Concepts Overview
- Study Island: Grade 8: Intro to Linear Functions
- Teacher generated practice for mixed review/ circle skills (i.e. Google Docs, Google Slides, Nearpod, Classkick, Edpuzzle, Google Sheets, Quizizz)

Remediation:

- Integration of manipulatives (manipulatives from previous units, graph paper and tables to show linear functions and relationships)
- Additional small-group instruction (flip charts from previous units)
- Differentiated materials, assignments, and assessments

Instructional Methods:

- Spiral review/warm-up
- Direct instruction/note-taking
- Guided practice with skills
- Partner practice with skills
- Independent practice with skills
- Utilization of manipulatives as appropriate
- Centers/stations
- Small and large-group direct instruction
- Small and large-group discussion
- Differentiated instruction
- Higher order thinking questions
- Teacher directed examples
- Mimio/Google slides presentations
- Define key terms relating to Mathematics
- Complete examples of problems in class
- Participate in individual, pair, and small group practice of concepts
- Complete hands-on activity to discover knowledge
- Practice with online programs (i.e. Khan Academy, Mobymax, Study Island, First in Math, [CK12](#))

Materials & Resources:

- Textbook: Holt- Pre-Algebra Grade 7 into 8
Chapter 11: Linear Equations
 - Linear Equations in Graphs
 - Slope and Plotting Slopes from given Data
 - Understanding key relationships involving the x and y variables in a table or graph for a linear function
- Warm ups
- Mimio/Google slides lessons
- Projector
- Notes/examples
- Handouts (worksheets)
- Teacher-generated worksheets and guided notes
- Activity supplies
- Calculators
- Individual white boards

- Desmos
- Digital Practice: Google Docs, Google Sheets, Google Slides, Edpuzzle
- www.hmhco.com
- www.khanacademy.org
- <http://www.mobymax.com/PA6068>
- <https://app.studyisland.com/cfw/login/>
- www.firstinmath.com
- www.ck12.org

Assessments:

- **Diagnostic**
 - Warm ups
 - In-class questioning
 - Check-ins
 - Pretests
 - Student pair-share and group discussion
 - Teacher observation of student work
 - Online resources
- **Formative**
 - Quizzes
 - Questioning techniques
 - Activities and worksheets
 - Online resources
- **Summative**
 - End-of-unit assessment and/or projects