PUBLIC SCHOOLS OF EDISON TOWNSHIP

OFFICE OF CURRICULUM AND INSTRUCTION

Grade 6 Mathematics

Length of Course	Term
Elective/Required:	Required
Schools:	Middle Schools
Eligibility:	Grade 6
Credit Value:	N/A
Date Approved:	August 26, 2019

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INTRODUCTION

The New Jersey Student Learning Standards for Mathematics are intended to provide students with a solid foundation. The Standards for Mathematical Content are a balanced combination of procedure and understanding.

In Grade 6, instructional time should focus on four critical areas: (1) connecting ratio and rate to whole number multiplication and division and using concepts of ratio and rate to solve problems; (2) completing understanding of division of fractions and extending the notion of number to the system of rational numbers, which includes negative numbers; (3) writing, interpreting, and using expressions and equations; (4) extending understanding of geometry, and (5) developing understanding of statistical thinking.

Mathematical Practice Standards:
This curriculum guide is standards based which reflects the New Jersey Student Learning Standards for Mathematics, the Mathematical Practices that are expected to be used in teaching mathematics K-12 are as follows and infused throughout the guide:

- Make sense of problems and persevere in solving them.
- Use appropriate tools strategically.
- Reason abstractly and quantitatively.
- Construct viable arguments and critique the reasoning of others.
- Model with mathematics.
- Attend to precision.
- Look for and make use of structure.
- Look for and express regularity in repeated reasoning.

Technology within the Curriculum: *(Refer to Instructional Actions Column on Guide - Recommended Activities/Strategies, Assessment Checkpoints and Resources)*
National / International Technology Student Standards
Standard 8.1 Educational Technology - All students will use digital tools to access, manage, evaluate, and synthesize information in order to solve problems individually and collaborate and create and communicate knowledge.

- Empowered Learner: Students leverage technology to take an active role in choosing, achieving, and demonstrating
  competency in their learning goals, informed by the learning sciences.
- Digital Citizenship: Students recognize the rights, responsibilities and opportunities of living, learning and working in an interconnected digital world, and they act and model in ways that are safe, legal and ethical.
- Knowledge Constructor: Students critically curate a variety of resources using digital tools to construct knowledge, produce creative artifacts, and make meaningful learning experiences for themselves and others.
- Creative Communicator: Students communicate clearly and express themselves creatively for a variety of purposes using the platforms, tools, styles, formats, and digital media appropriate to their goals.

Career Ready Practices within the Curriculum: *(Refer to Instructional Actions Column on Guide - Recommended Activities/Strategies)*
College Ready practices are practices that have been linked to increase college, career, and life success.

- CRP1. Act as a responsible and contributing citizen and employee
- CRP2. Apply appropriate academic and technical skills.
- CRP4. Communicate clearly and effectively and with reason
- CRP6. Demonstrate creativity and innovation.
- CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.
- CRP11. Use technology to enhance productivity.

SCOPE & SEQUENCE

MARKING PERIOD 1:

Ratios & Rates

Ratios
Ratios Tables & Graphs
Rates & Unit Rates
Comparing Rates
Measurement Conversions

Multi-Digit Operations

Decimals Operations (Add, Subtract, Multiply)
Dividing Multi-Digit Numbers
Dividing Decimals
Common Factors & Multiples

MARKING PERIOD 2:

Percents

Intro to Percents
Percents, Decimals & Fractions
Percent of Number
Percent Applications

Fraction Operations

Multiplying Fractions
Fraction Division Models
Dividing Fractions
Multiplying & Dividing Mixed Numbers

Rational Numbers & The Coordinate Plane

Intro to Integers
Comparing Rational Numbers
Intro to Inequalities
Coordinate Plane

MARKING PERIOD 3:

Expressions

Power & Exponents
Order of Ops
Variables & Expressions
Evaluating Expressions
Equivalent Expressions
The Distributive Property

Equations

Equations & Solutions
Solving One-Variable Equations
Percent Equations
Input-Output Tables
Writing Two-Variable Equations
Graphing Two-Variable Equations

MARKING PERIOD 4:

Geometry

Area of Polygons & Composite Figures
Nets & Surface Area
Volume of Rectangular Prisms

Statistics

Statistical Questions
Measures of Central Tendency
Measures of Variability
Data Displays
Describing Distributions

**Integer Operations with remaining time to prepare for 7th Grade

***Ratios & Rates*: Understand ratio concepts and use ratio reasoning to solve problems.**

Essential Questions	Enduring Understandings
➔ What is a ratio? How can a ratio help us understand relationships between quantities? ➔ How can unit rates help to make comparisons and solve problems?	➔ A ratio is a comparison of two quantities, ratios are used to make comparisons through equivalent fractions, models such as pictures, tables, graphs, and equations. ➔ Reason through unit price, better buy.

Core Content		Instructional Actions	
Objectives:	**Alignment to NJSLS:**	**Recommend Activities/Strategies:**	**Assessment Check points:**
★ Write a ratio to describe a relationship between 2 quantities. ★ Compare and contrast ratios.	**NJSLS.Math.6.RP.A.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.** *For ex., "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A rec'd, candidate C rec'd nearly 3 votes."*	★ Ed Gems - Lesson 1.1 ★ DE - Concept 1.1 ★ DE - Concept 1.2 ★ Thinking Blocks - Solve ratio word problems using models ★ Thinking Blocks Tool - Create & model ratio word problems ★ Math Snacks - Ratios video & activity ★ Dunk Tank - Ratio game ★ Ratio Rumble - Ratio game	Objectives to be Assessed: ● Ratios, ● Ratio Tables ● Rates & Unit Rates ● Measurement Conversions Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments ● Quizzes ● Test ● PBLs ● Performance Assessment
★ Determine equivalent ratios.	**NJSLS.Math.6.RP.A.3** **Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.** ★ **6.RP.A.3a** Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.	★ Ed Gems - Lesson 1.2 ★ Desmos - Take a Hike w/Ratio Tables ★ Khan Academy- Ratio tables practice	

★ Identify rate and create a definition for unit rate.	**NJSLS.Math.6.RP.A.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0, & use rate language in context of a ratio relationship.** *For ex, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for ea. cup of sugar." "We paid $75 for 15 burgers, a rate of $5 per burger."*	★ Ed Gems - Lesson 1.3 ★ DE - Concept 4.1 ★ Unit Rates and ratios activity ★ Unit price - Project	
★ Apply knowledge of ratios and rates to solve real world problems.	**NJSLS.Math.6.RP.A.3** **Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.** ★ **6.RP.A.3b** Solve unit rate problems including those involving unit pricing and constant speed. For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?	★ Ed Gems - Lesson 1.4 ★ Scale City - Ratios and Scale Interactive Problem Solving ★ New-Tritional Info -Unit rates and ratio reasoning in regards to Mcdonald's items. ★ Sugar Packets (PBL) ★ Nana's Chocolate Milk (PBL) ★ Nana's Chocolate Milk Hyperdoc ★ Desmos- Ratio reasoning activities ★ Sticky Note Challenge ★ Quizizz - Ratios, rates & unit rates review quiz	
★ Convert measurements using ratio reasoning .	★ **6.RP.A.3d** Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.	★ Ed Gems - Lesson 1.5 ★ DE- 4.2 Convert Measurements using Ratios Investigation 1 ★ Conversions Chart - Google Doc ★ Guided notes - Google Slide ★ Units of measure activities ★ Rock, paper, scissor - Conversions game ★ Measurement Menu - Practice games	

Instructional Adjustments: *Modifications/Student difficulties/Common errors*

Appropriate accommodations and/or modifications as determined by 504's and IEP's:
shortened assignments, extended time, copy of class notes or access to notes on chromebook, preferential seating, oral reminders, etc.
Ask students to restate information, directions, and assignments.

***Multi-Digit Operations:* Compute fluently with multi-digit numbers and find common factors and multiples.**

Essential Questions	Enduring Understandings
➔ Is it possible to represent numbers in different ways and how is that useful?	➔ Numbers can be represented in multiple ways, including decimal form. Operations with decimals can facilitate solving real world problems.
➔ Why is place value important when performing decimal operations?	➔ Place value is important in establishing and understanding the algorithms for each decimal operation.
➔ Why and how does the standard algorithm for dividing multi-digit numbers work?	➔ Composing and decomposing numbers according to place value is the basis for the standard algorithm for division.
➔ How can we interpret the quotient of division word problems?	➔ The context of a problem determines the reasonableness of a solution.
➔ How can we use factors to rewrite numbers and identify relationships between them?	➔ A number can be broken down into its factors. Common multiples and factors can be identified, including least common multiple and greatest common factor.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommend Activities/Strategies**	**Assessment Check points**
★ Recall and relate place value of decimals. ★ Add, subtract, and multiply multi-digit decimals using the standard algorithm.	**NJSLS.Math.6.NS.B.3** **Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.**	★ Ed Gems- Lessons 2.1 and 2.2 ★ DE 3.2 - Decimal Multiplication Investigation 1 using area (interactive) ★ Multiplying Decimals Scoot - free download TPT ★ Coinstar (PBL) ★ Fun Brain Game - operations with decimals practice game ★ Decimals Workshop - decimal operation practice ★ Cool Math - self-correcting decimal cruncher for all operations ★ Jeopardy Rocks - decimal operations jeopardy game ★ Decimal Operations Review - Google Slide ★ Candy Conundrum - Adding & subtracting decimals ★ Workin' on the Weekend - Adding & subtracting decimals ★ Quizizz - Multiplying & Dividing Decimals Review	Objectives to be Assessed: • Decimal Operations • Division • Factors and Multiples Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments • Quizzes • Test • PBLs • Performance Assessment
★ Find the quotient of multi-digit numbers using the standard algorithm. ★ Understand place value and its importance when dividing.	**NJSLS.Math.6.NS.B.2** **Fluently divide multi-digit numbers using the standard algorithm.**	★ Ed Gems- Lessons 2.3 and 2.4 ★ DE - 2.1 Engage & Investigation 1 ★ Long Division Practice - Division of multi-digit numbers practice ★ Math Mountain - Step-by-step practice of long division algorithm ★ Millionaire Game - Long division game for 6th grade ★ Error analysis - TPT free download ★ Youtube Video - Silly video to help remember the steps ★ Long Division WS - Practice with gridlines for organization	

★ Divide multi-digit decimals using the standard algorithm.	**NJSLS.Math.6.NS.B.3** **Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.**	★ Ed Gems- Lesson 2.5 ★ DE 3.2 How much money? - Investigation 2 (decimal division) ★ DE 3.2 How much will a party cost? - Apply 3 ★ Fun Brain Game - operations with decimals practice game ★ Decimals Workshop - decimal operation practice ★ Jeopardy Rocks - decimal operations jeopardy game ★ Decimal Operations Review - Google Slide ★ Quizizz - Multiplying & Dividing Decimals Review ★ Invented problems - Number system	
★ Write prime factors of composite numbers. ★ Identify the greatest common factor (GCF) and least common multiple (LCM) of two whole numbers. ★ Writing equivalent expressions using the GCF and distributive property.	**NJSLS.Math.6.NS.B.4** **Find the greatest common factor of 2 whole #'s less than or equal to 100 and the least common multiple of 2 whole #'s less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.** *For example, express 36 + 8 as 4 (9 + 2).*	★ Ed Gems- Lesson 2.6 ★ Class activity - Factors & GCF ★ Intro activity - GCF & LCM ★ Kahoot - GCF review Kahoot game ★ Shipping Routes - LCM Intro (PBL- Dan Meyer) ★ Yummy Math - LCM Lunar New Year (PBL) ★ Word problem sort - GCF & LCM ★ Quizizz - Prime factorization, GCF & LCM review quiz	

Instructional Adjustments:

Modifications/Student difficulties/Common errors

Appropriate accommodations and/or modifications as determined by 504's and IEP's:
shortened assignments, extended time, copy of class notes or access to notes on chromebook, preferential seating, oral reminders, etc.
Ask students to restate information, directions, and assignments.

Percents: Apply and extend our understanding of rational numbers and include percent application.

Essential Questions	Enduring Understandings
➔ What are percents? How do they relate to ratios? ➔ What is the relationship between fractions, decimals and percents? ➔ How can rates, ratios, and proportional reasoning help us better understand the use of ratios and rates in the world around us?	➔ Fractions and decimals have percent equivalents. Percent is a ratio comparing the part to the whole. ➔ A percent is a ratio that compares a number to 100. ➔ Become flexible moving between fractions, decimals and percents. ➔ Find the whole when given the part and the percent. ➔ Solve real- world percent problems involving discounts and mark-ups.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommend Activities/Strategies**	**Assessment Check points**
★ Convert between fractions, decimals and percents	★ **6.RP.A.3c** Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	★ Ed Gems - Lesson 3.1 & 3.2 ★ DE 4.3 FDP - Investigation 1 ★ Ratios, rates & percents review - Google Slide ★ Interactive Puzzle ★ Matching Game ★ Dunk Tank ★ Desmos - Battery	Objectives to be Assessed: ● Converting between fractions, decimals and percents ● Percent of a number ● Discounts/Mark-ups using percents Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments ★ Quizzes ★ Test ★ PBLs ★ Performance Assessment
★ Find the percent of a number		★ Ed Gems - Lesson 3.3 ★ DE 4.3 Finding the Part - Investigation 3 ★ DE 4.3 Finding the Whole - Investigation 4 ★ Word Problem Practice ★ Desmos - Pondering Percent ★ Open Middle - Challenge	
★ Solve problems involving discounts and markups.		★ Ed Gems - Lesson 3.4 ★ DE 4.3 Black Friday Master Shopper - Investigation 6 ★ Amazon Percent Discount (PBL) ★ Dueling Discounts - 3 Act Math Task ★ Dueling Discounts - Workspace	

Instructional Adjustments:

Modifications/Student difficulties/Common errors

Appropriate accommodations and/or modifications as determined by 504's and IEP's:
shortened assignments, extended time, copy of class notes or access to notes on chromebook, preferential seating, oral reminders, etc.
Ask students to restate information, directions, and assignments.

Fraction Operations: *Apply and extend previous understandings of multiplication and division to divide fractions by fractions.*

Essential Questions	Enduring Understandings
➔ How can multiplication and division of fractions be modeled? ➔ What is the relationship between division of whole numbers and multiplication of fractions reciprocals? ➔ How can multiplication and division of fractions be used to represent and understand real-world, and mathematical problems?	➔ Physical models are an authentic way to solve and explain real-world mathematical situations. ➔ A fraction division calculation can be changed to an equivalent multiplication calculation ➔ When you multiply or divide mixed numbers you must first rename them as improper fractions.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommend Activities/Strategies**	**Assessment Check points**
★ Multiply fractions using models and the algorithm	**6.NS.A.1** Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. For ex., create a story context for (⅔) ÷ (¾) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (⅔)÷ (¾) = 8/9 because ¾ of 8/9 is ⅔. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share ½ lb of chocolate equally? How many ¾-cup servings are in ⅔ of a cup of yogurt? How wide is a rectangular strip of land with length ¾ mi and area ½ square mi?.	★ Ed Gems Lesson 4.1 ★ Khan Academy - Multiply fractions using models ★ Math Millionaire ★ Area Models ★ IXL Model Questions	Objectives to be Assessed: ● Multiply Fractions ● Divide Fractions ● Find the products and quotients of mixed numbers Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments ★ Quizzes ★ Test ★ PBLs ★ Performance Assessment
★ Divide fractions using models ★ Find quotients of expressions involving two fractions		★ Ed Gems - Lessons 4.2 & 4.3 ★ DE - 3.1 Dividing Fractions ★ Khan Academy - Understanding Division of Fractions ★ Dividing fractions practice - Google doc ★ Thinking Blocks - Solve fraction word problems using models ★ Divide Fractions with Models ★ Open Middle (Challenge)	

★ Find the products and quotients of expressions that include mixed numbers.		★ Ed Gems - Lessons 4.4 ★ Converting Mixed Numbers Game ★ Divide Fractions & Mixed Numbers Practice	

Instructional Adjustments:

Modifications/Student difficulties/Common errors

Appropriate accommodations and/or modifications as determined by 504's and IEP's:
shortened assignments, extended time, copy of class notes or access to notes on chromebook, preferential seating, oral reminders, etc.
Ask students to restate information, directions, and assignments.

***Rational Numbers and the Coordinate Plane:* Apply and extend previous understandings of numbers to the system of rational numbers and the coordinate plane.**

Essential Questions	Enduring Understandings
➔ What does it mean to have less than zero? ➔ How can I describe a situation using positive & negative numbers? ➔ What is absolute value? ➔ How can I compare rational numbers? ➔ How do inequalities represent real-world situations? ➔ What is a coordinate plane? How does a coordinate plane help you solve real-world problems?	➔ A number less than zero is negative and is the opposite of a whole number. ➔ Negative numbers are used to represent situations with debt and measuring temperature, sea level, etc. and can help solve real word problems. ➔ Absolute value is the distance from zero. ➔ Inequalities can be used to represent real world situations where there is not one definitive answer. ➔ A coordinate plane is an extension of a number line to another dimension. Using a coordinate plane helps to locate objects on a plane.

Core Content		Instructional Actions	
Objectives:	**Alignment to NJSLS:**	**Recommend Activities/Strategies:**	**Assessment Check points:**
★ Represent real-world situations using positive and negative numbers. ★ Compare and order integers ★ Develop an understanding of the meaning of "opposite of a number." ★ Identify the absolute value of a number	**NJSLS.Math.6.NS.C.5** **Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.** **NJSLS.Math.6.NS.C.7** **Understand ordering and absolute value of rational numbers.** ★ **6.NS.C.7c** Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. For example, for an account balance of –30 dollars, write |–30| = 30 to describe the size of the debt in dollars. ★ **6.NS.C.7d** Distinguish comparisons of absolute value from statements about order. For example, recognize that an account balance less than –30 dollars represents a debt greater than 30 dollars.	★ Ed Gems - Lesson 7.1 ★ DE 5.1 Explore the Number line - Engage ★ DE 5.1 Plotting & Comparing Numbers- Investigation 1 ★ DE 5.1 Investigation 2 - Can You Have an Opposite? ★ DE 5.3 Absolute Value - Investigation 1 (interactive) ★ Intro - Absolute value do now ★ Absolute value guided notes - Google Slide ★ Weather Extremes PBL - Compare record high and low temps (integers) and use absolute value ★ Comparing heights & depths - research application ★ Integer PBL ★ Integers guided notes - Google Slide ★ Quizlet - Comparing and ordering integers	Objectives to be Assessed: ★ Integers ★ Opposites ★ Absolute Value ★ Compare and order rational numbers ★ Inequalities ★ Coordinate Plane ★ Polygons & the coordinate plane Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments (Quizzes, Tests, PBL's)

★ Identify rational numbers on the number line ★ Develop understanding of the meaning of the "opposite of a number."	**NJSLS.Math.6.NS.C.6** **Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.** ★ **6.NS.C.6a** Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., –(–3) = 3, and that 0 is its own opposite.	★ Ed Gem - Lesson 7.2 ★ DE 5.2 Comparing Rational Numbers - Investigation 2 ★ Comparing and ordering rational number cards ★ Integers, Abs. Value & Rational #s Review - practice links ★ Quizizz - Integers & Rational Numbers Review	
★ Represent and write inequalities ★ Relate a written inequality to the position of numbers on the number line. ★ Compare and interpret rational numbers in real-world contexts.	**NJSLS.Math.6.EE.B.8 Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.** **NJSLS.Math.6.NS.C.7** **Understand ordering and absolute value of rational numbers.** ★ **6.NS.C.7a** Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. For example, interpret –3 > –7 as a statement that –3 is located to the right of –7 on a number line oriented from left to right. ★ **6.NS.C.7b** Write, interpret, and explain statements of order for rational numbers in real-world contexts. For example, write –3 C > –7 C to express the fact that –3 C is warmer than –7 C.	★ Ed Gems - Lesson 7.3 ★ DE 8.2 Exploring Inequalities - Engage ★ DE 8.2 Exploring Inequalities on a number line - Investigation 1 ★ DE 8.2 Writing Inequalities - Investigation 2 ★ illustrative Math PBL - Fishing adventure inequalities task ★ What Rides Can You Go On? PBL - Inequalities in the real world ★ Matching activity - Google Slide ★ Represent solutions of Inequalities - Guided notes	
★ Understand that signs of numbers in ordered pairs indicate their location on the coordinate plane. ★ Compare and contrast reflections to the signs of a set of ordered pairs. ★ Plot pairs of rational numbers on the coordinate plane.	★ **6.NS.C.6b** Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. ★ **6.NS.C.6c** Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.	★ Ed Gems - Lesson 7.4 ★ DE 6.1 Archeological Dig - Engage ★ DE 6.1 Scavenger Hunt - Investigation 1 ★ Game Over Gopher - Plotting coordinate points game ★ Intro to coordinate plane - Do now ★ Intro to coordinate plane - Discovery activity ★ Geogebra - Reflections investigation ★ Graphing reflections activity ★ Quadrants & reflections - Discovery activity ★ Reflections guided notes - Google Slide ★ Battle Boats - Coordinate Plane ★ Coordinate Plane Activity	

★ Analyze and solve real-world problems involving the coordinate plane. ★ Solve real world area problems by plotting polygons in the coordinate plane.	**NJSLS.Math.6.NS.C.8** **Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.** **NJSLS.Math.6.G.A.3** **Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.**	★ Ed Gems - Lesson 7.5 ★ DE 6.1 Mapping classroom objects - Investigation 2 ★ DE 6.2 Use coordinate geometry - Engage ★ DE 6.2 Use coordinate geometry - Investigation 2 ★ Foldable(small group) ★ Coordinate distances - Do now ★ GeoCaching - Extension activity ★ Review - Google slide ★ Task Cards ★ Khan academy - Drawing polygons w/coordinates ★ Khan academy - Drawing polygons challenge ★ Desmos - Target Practice ★ Desmos - Battleship	

Instructional Adjustments:

Modifications/Student difficulties/Common errors

Appropriate accommodations and/or modifications as determined by 504's and IEP's:
Shortened assignments, extended time, copy of class notes or access to notes on chromebook, preferential seating, oral reminders, etc.
Ask students to restate information, directions, and assignments.

***Expressions:* Extend students' understanding of expressions involving numerical and algebraic expressions to evaluate expressions and generate equivalent expressions.**

Essential Questions	Enduring Understandings
➔ What are exponents? How can exponents be used to rewrite expressions? ➔ How can we represent mathematical expressions that have unknown numbers? ➔ What does it mean for two expressions to be equivalent?	➔ An exponent is the number that indicates how many times the base is used as a factor. Expressions with repeated factors can be rewritten in exponential form. ➔ Variables can be used to represent unknown quantities in mathematical expressions. ➔ Two or more expressions are equivalent if their values are equal. Inequalities are used when two expressions are not equivalent.

Core Content		Instructional Actions	
Objectives:	**Alignment to NJSLS:**	**Recommend Activities/Strategies:**	**Assessment Check Points:**
★ Connect that exponential notation indicates repeated multiplication. ★ Evaluate expressions with whole-number exponents.	**NJSLS.Math.6.EE.A.1** **Write and evaluate numerical expressions involving whole-number exponents.**	★ Ed Gems - Lesson 5.1 ★ Penny-a-day task - PBL intro ★ Notes - TPT free download ★ Guided notes - Google Doc ★ Desmos - Exponent Card Sort ★ IXL - Missing Exponent	Objectives to be Assessed: • Exponents & Order of Operations • Algebraic Expressions • Evaluating Expressions • Equivalent Expressions Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments (Quizzes, Tests,
★ Evaluate and write numerical expressions involving order of operations with exponents.		★ Ed Gems - Lesson 5.2 ★ BrainPOP - Order of Operations video and quiz ★ Royal Rescue - Order of Operations game ★ Quizlet - Order of Operations assessment ★ Rap - PEMDAS song ★ DE - analyze the error ★ Foldable - free download TPT (focused note-taking) ★ QR Task Cards- free download TPT ★ Desmos - Twin Puzzles	
★ Translate mathematical sentences into algebraic expressions. ★ Identify parts of an expression.	**NJSLS.Math.6.EE.A.2** **Write, read, and evaluate expressions in which letters stand for numbers.** ★ **6.EE.A.2a** Write expressions that record operations with numbers and with letters standing for numbers. For example, express the calculation "Subtract y from 5" as 5 – y. ★ **6.EE.A.2b** Identify parts of an expression using mathematical terms (sum, term, product, factor,	★ Ed Gems - Lesson 5.3 ★ DE - 7.1 Algebraic Expressions Engage ★ DE - 7.1 Algebraic Expressions Investigation 3 ★ Khan Academy - Variables and expressions videos and practice problems ★ Video - Understanding Algebraic Terms ★ Translating expressions - guided notes	

	quotient, coefficient); view one or more parts of an expression as a single entity. For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms. ★ **6.EE.A.2c** Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). For example, use the formulas $V = s^3$ and $A = 6 s^2$ to find the volume and surface area of a cube with sides of length s = 1/2. **NJSLS.Math.6.EE.6** **Use variables to represent whole numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.**	★ Ed Gems - Lesson 5.4 ★ DE - 7.2 - Investigation 1, Hands-On Activity ★ iknowit - Online practice with tables included (Basic expressions) ★ Quia - Rags to Riches Game ★ IXL - Evaluating Expressions with 2 Variables	PBL's)
★ Evaluate algebraic expressions and express real-world problems algebraically.			
★ Apply the properties of operations to identify equivalent algebraic expressions. ★ Recognize and combine like terms to generate equivalent expressions ★ Define and identify when algebraic expressions are equivalent.	**NJSLS.Math.6.EE.A.3** **Apply the properties of operations to generate equivalent expressions.** *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.* **NJSLS.Math.6.EE.A.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).** *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*	★ Ed Gems - Lesson 5.5 - Equivalent Expressions ★ Ed Gems - Lesson 5.6 - Distributive Property ★ DE - 7.3 Engage "Keep it Level" ★ DE - 7.3 - Using Properties to identify equivalent expressions investigation 1 ★ DE - 7.3 - Using Distributive Property to identify equivalent expressions investigation 2 ★ Equivalent Expressions - guided notes ★ DE - 7.3 - Combining Properties to identify equivalent expressions investigation 3 ★ Combining like terms Activity ★ Manipulative ★ Combining like terms DI ★ Equivalent expressions activity ★ Desmos - Properties Card Sort	

Instructional Adjustments:

Modifications/Student difficulties/Common errors

Appropriate accommodations and/or modifications as determined by 504's and IEP's:
shortened assignments, extended time, copy of class notes or access to notes on chromebook, preferential seating, oral reminders, etc.
Ask students to restate information, directions, and assignments.

Equations: ***Apply students' understanding of expressions to equations to determine the solution to an equation with one variable.***

Essential Questions	Enduring Understandings
➔ What does it mean for a number to be a solution to an equation? ➔ How can we use our knowledge of expressions to write and solve equations? ➔ What ways can we represent the solutions to equations with two variables?	➔ One variable equations have one solution that can be determined by applying inverse operations. ➔ Variables can be used to represent unknown quantities in mathematical equations. ➔ Solutions of equations with two variables can be represented in an input-output table and graphed on a coordinate plane.

Core Content		Instructional Actions	
Objectives:	**Alignment to NJSLS:**	**Recommend Activities/Strategies:**	**Assessment Check Points:**
★ Prove true solutions to equations through substitution.	**NJSLS.Math.6.EE.B.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.** **NJSLS.Math.6.EE.B.6 Use variables to represent numbers and write equations when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.**	★ Ed Gems - Lesson 6.1 ★ How many blocks are in the bag? - Intro to equations ★ Understanding Solutions of Equations -Guided notes ★ Quizizz - Equations assessment	Objectives to be Assessed: • One-Variable Equations • Two-Variable Equations • Writing & Solving Equations
★ Apply inverse operations to solving equations ★ Solve one-step equations with positive numbers, fractions, and decimals. ★ Construct equations in relation to real world problems.	**NJSLS.Math.6.EE.B.6 Use variables to represent numbers and write equations when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.** **NJSLS.Math.6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all nonnegative rational numbers.**	★ Ed Gems - Lesson 6.2 - Addition & Subtraction Equations ★ Ed Gems - Lesson 6.3 - Multiplication & Division Equations ★ DE - 8.1 - Investigation 1, Using a Pan Balance to Solve Equations ★ DE - 8.1 - Investigation 2, Exploring Equations ★ DE - 8.1 - Choosing a Method ★ Khan Academy - Equations Video and Practice ★ Math Play - One-Step Equations Game ★ Hoop Shoot - Mult & Div equations game ★ Equations Pong - One step equations game ★ Quia - One-step equations Jeopardy ★ 1-Step Equations Word Problem, Cut & Paste - free download TPT	Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments (Quizzes, Tests, PBL's)

		★ Illustrative Math - Morning Walk equations task (PBL)	
★ Write and solve percent equations.	**NJSLS.Math.6.EE.B.7 Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q and x are all nonnegative rational numbers.** **6.RP.A.3c** Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.	★ Ed Gems - Lesson 6.4 ★ Khan Academy - Percent Word Problems	
★ Create input-output tables for equations with two variables. ★ Use equations to express the relationship between dependent and independent variables. ★ Write equations for table graphs and contextual situations. ★ Graph a two-variable equation on the coordinate plane.	**NJSLS.Math.6.EE.C.8 Solve real world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.** **NJSLS.Math.6.EE.C.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.** *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*	★ Ed Gems - Lesson 8.1 : Input-Output Tables ★ Ed Gems - Lesson 8.2 : Writing Two-Variable Equations ★ Ed Gems - Lesson 8.3 : Graphing Two-Variable Equations ★ DE - 9.1 Relationships between 2 variables - Investigation 2 ★ Quizizz - Writing & Solving Equations assessment ★ Illustrative Math - Chocolate Bar Sales independent/dependent variable task. (PBL) ★ Equation word problems - Google doc	

Instructional Adjustments:

Modifications/Student difficulties/Common errors

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***Geometry:* Solve real-world and mathematical problems involving area, surface area, and volume.**

Essential Questions	Enduring Understandings
➔ How can we decompose shapes into more familiar ones?	➔ Composite figures can be broken down into familiar figures. Finding the area of each familiar figure and adding them together is useful in finding the area of the entire irregular figure.
➔ How can we represent the surfaces of 3D objects in two dimensions?	➔ Vertices, edges, and faces of 3D objects can be identified to represented.
➔ What is a net? How are nets used to find surface area and volume?	➔ A net is a two-dimensional model of a three-dimensional figure. Nets are useful in finding surface area and volume in that it assists in visualizing each face of the three-dimensional shape.
➔ What is surface area?	➔ Surface area is the total amount of area covering a three-dimensional figure.
➔ What is volume?	➔ Volume is the number of cubic units needed to fill a solid figure.

Core Content		Instructional Actions	
Objectives:	**Alignment to NJSLS:**	**Recommend Activities/Strategies:**	**Assessment Check points:**
★ Develop and apply strategies and formulas for finding the area of 2-dimensional figures. ★ Apply area to composite figures.	**NJSLS.Math.6.G.A.1** **Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.**	★ Ed Gems- Lessons 9.1, 9.2 & 9.3 ★ DE - 12.1 Parallelograms Investigation 1 Google slide ★ DE - 12.1 Triangles Investigation 2 Google slide ★ DE - 12.1 Triangles Investigation 3 Google slide ★ DE - 12.1 - Explore Area with Tangrams Extension ★ Youcubed - Paper-folding task ★ Illustrative Math- Wallpaper Decomposition ★ Geogebra - area of parallelograms discovery ★ Geogebra - area of trapezoid discovery ★ Online quiz - Area of composite shapes ★ Challenge: Investigating Irregular polygons	Objectives to be Assessed: • Area of Polygons & Composite Figures • Nets & Surface Area • Volume of Rectangular Prisms Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments ★ Quizzes ★ Test ★ PBLs ★ Performance Assessment
★ Draw nets for solids and find surface area by using a net. ★ Apply formulas for finding the surface area of 3-dimensional figures. ★ Apply concept of surface area to solve real-world application problems. .	**NJSLS.Math.6.G.A.4 Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.**	★ Ed Gems- Lesson 9.4 ★ Desmos: Nets & Surface Area ★ Dandy Candies (PBL) ★ Illustrative Math: Cristo's Building ★ Illustrative Math: Painting a Barn ★ Area, Surface area & volume - Practice	
★ Develop and apply strategies and formulas for finding the volume of rectangular prisms with fractional dimensions. ★ Solve real-world and	**NJSLS.Math.6.G.A.2** **Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the**	★ Ed Gems- Lesson 9.5 ★ DE - 13.2 Calculate volume ★ Desmos: Modeling with Unit Cubes ★ Volume & Surface Area Interactive Problems ★ Real world volume problems	

mathematical problems involving volume.	**same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.**	★ Khan academy: Volume Word Problems ★ Khan academy: Volume Word Problems w/fractions & decimals	

Instructional Adjustments:

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Statistics: *Develop an understanding of statistical variability, and summarize and describe distributions*

Essential Questions	Enduring Understandings
➔ Which data displays are most useful in various situations?	➔ Histograms are used to identify frequency of intervals in a large range of numbers. Line plots are useful when you have small data sets and want to see individual data values. Box-and-whisker plots show the spread of data with a focus on the center of the data set.
➔ Why are measures of central tendency useful?	➔ Measures of center (or central tendency) summarize all of the data with a single number.
➔ What is a statistical question?	➔ A statistical question investigates the real-world and can have more than one response.

Core Content		Instructional Actions	
Objectives:	**Alignment to NJSLS:**	**Recommend Activities/Strategies:**	**Assessment Check Points:**
★ Develop understanding of statistical questions and statistical variability.	**NJSLS.Math.6.SP.A.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.** Ex:"How old am I?" is not one but "How old are the students in my school?" is because one anticipates variability in students' ages.	★ Ed Gems- Lesson 10.1 ★ Khan Academy - Statistical Questions Practice ★ Statistical Questions - Guided notes ★ Statistical Questions - Card sort ★ Statistical Questions - Card sort answer key	Objectives to be Assessed: • Statistical Questions • Measures of Central Tendency • Measures of Variability • Data Displays • Describing Distributions Teacher Observations Do Nows/Exit Slips Classwork/Homework/ Docs/Forms Stations/Games/Computer Games Assessments (Quizzes, Tests, PBL's)
★ Summarize and describe data and distributions by using measures of central tendency and mean absolute deviation.	**NJSLS.Math.6.SP.A.2** Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. **NJSLS.Math.6.SP.A.3** Recognize that a measure of center for a numerical data set summarizes all of its values with a single #, while a measure of variation describes how its values vary with a single number.	★ Ed Gems- Lessons 10.2 and 10.7 ★ Blendspace - Measures of Central Tendency ★ Measures of Central Tendency Video ★ Central Tendencies - Reinforcement ★ Mean Absolute Deviation Video ★ Spring into Statistics Project ★ MMMR & MAD - Review activity	
★ Organize and interpret data by creating frequency tables, dot plots, box plots, and histograms.	**NJSLS.Math.6.SP.B.4** Display numerical data in plots on a number line, including dot plots, histograms, & box plots.	★ Ed Gems- Lessons 10.3, 10.4 & 10.5 ★ DE 10.1 - Collect and Represent Data ★ Box & Whisker Plots - Scholastic activity ★ Box & Whisker Plot - Interactive questions ★ Create Line Plots - Practice ★ Histograms - Practice activity	

★ Observe and analyze data.	**NJSLS.Math.6.SP.B.5** Summarize numerical data sets in relation to their context, such as by: ★ **6.SP.B.5a** Reporting the number of observations. ★ **6.SP.B.5b** Describing the nature of the attribute under investigation, including how it was measured & its units of measurement.. ★ **6.SP.B.5c** Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. ★ **6.SP.B.5d** Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.	★ Ed Gems- Lesson 10.6 ★ DE 10.2 - Shapes of Box Plots - Investigation 2 ★ DE 10.2 - What type of Graph is best - Investigation 3 ★ DE 10.2 - Misleading Graphs - Extension ★ Interpreting Line Plots - Practice ★ Interpreting Line Plot Data- Balloon Pop Activity ★ Describing Distributions - Carnival games activity ★ Statistics Review - practice questions	

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