PUBLIC SCHOOLS OF EDISON TOWNSHIP

OFFICE OF CURRICULUM AND INSTRUCTION

Math Prime 8

Length of Course: Term

Elective/Required: Required

Schools: Middle Schools

Eligibility: Grade 8

Credit Value: 5 Credits

Date Approved: August 17, 2021

TABLE OF CONTENTS

Introduction

The New Jersey Student Learning Standards (NJSLS) for Mathematics are intended to provide students with a solid foundation in number sense, in particular whole numbers, fractions, and decimals. The focus of instructional time for the course of Math Prime 8 is on formulating reason about expressions and equations; modeling bivariate data with linear equations; solving linear equations and systems of linear equations; understanding the concept of a function and using functions to describe quantitative relationships; analyzing two- and three-dimensional figures using distance, angle, similarity, and congruence, and applying the Pythagorean Theorem to solve problems.

This curriculum guide is standards based which reflects the NJSLS 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.

The purpose of the revision was to further integrate the practice standards as well as incorporate technology in a meaningful way to enhance instruction and learning. Learning mathematics with understanding is essential to enable students to problem solve. Students learn mathematics by problem solving, not just by listening and memorizing. When mathematical facts are connected, taught in a contextual setting, applied to real world applications, and infused in technology knowledge is more likely retained.

The primary resource for this course is **EdGems Math Course 3**.

SCOPE & SEQUENCE: Math Prime 8

MARKING PERIOD 1	MARKING PERIOD 2
Unit 0 Pre-Assess	**Unit 4 Proportional Relationships**
Integers/Order of Operations	3.1 Understanding Functions
Combining Like Terms	3.2 Proportional Relationships
Distributive Property	3.3 Calculating Slope from Graphs
Unit 1 Equations	3.4 The Slope Formula
1.1 Solve One and Two-Step Equations	
1.2 Solve Multi-Step Equations	
1.3 Solutions to Linear Equations/Variables Both Sides	**Unit 5 Functions**
Unit 2 Square Roots and Solving with Square Roots	4.6 Interpreting Graphs of Functions
1.4 Square Roots and Cube Roots	4.1 Graphing Using Slope Intercept Form
1.5 Solving Equations With Exponents	4.2 Writing Linear Equations for Graphs
1.6 Simplifying Roots	4.3 Writing Linear Equations from Key Information
Unit 3 The Pythagorean Theorem	
2.1 The Pythagorean Theorem	
2.2 Applying the Pythagorean Theorem	
2.3 Distance on the Coordinate Plane	
MARKING PERIOD 3	**MARKING PERIOD 4**
Unit 6 Systems of Equations	**Unit 8 Angle Relationships**
5.1 Parallel, Intersecting of the Same Line	6.1 Alternate Exterior and Interior Angles
5.2 Solving Systems by Graphs	6.2 Corresponding and Same-Side Interior Angles
5.3 Solving Systems by Substitutions	6.3 Angle Sum of a Triangle
5.4 Solving Systems Using Elimination	6.4 Congruent and SImilar Triangles
5.5 Applications of Systems of Equations	**Unit 9 Volume**
	9.1 Volume of Cylinders
	9.2 Volume of Cones
Unit 7 Transformations	9.3 Volume of Spheres
7.1 Reflections	**Unit 10 Exponent Properties**
7.2 Translations	8.1 Multiplications Properties of Exponents
7.3 Rotations	8.2 Division Properties of Exponents
7.4 Dilations	8.3 Scientific Notation
7.5 Composition of Transformations	8.4 Application of Scientific Notation

Please note: Instructors will change their pacing and timing as needed to accommodate class periods available.

Unit 0: Pre-Assess: Integers, Order of Operations, Combining Like Terms, Distributive Property	
Essential Questions	**Enduring Understandings**
● What are the various methods that can be used to evaluate numerical and algebraic expressions?	● Numerical and algebraic expressions can be simplified/evaluated using order of operations and computation of rational numbers

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Find the value of numerical expressions using the order of operations.

Create and evaluate variable expressions.

Apply and utilize mathematical properties to simplify variable expressions. | **6.EE.2 (Supporting Standard)** Write, read and evaluate expressions in which letters stand for numbers.

7.NS.3 (Supporting Standard) Solve real-world and mathematical problems involving the four operations with rational numbers.

A.SSE.1b - Interpret complicated expressions by viewing one or more of their parts as a single entity. *For example, interpret P(1+r)n as the product of P and a factor not depending on P.*

A.SSE.2 - Use the structure of an expression to identify ways to rewrite it. *For example, see x4 - y4 as (x2)2 - (y2)2, thus recognizing it as a difference of squares that can be factored as (x2 - y2)(x2 + y2).* | **From EdGems Course 2 Accelerated Online Text:**
Lesson Guide 1.0
Edgems Unit 2
Edgems Unit 3
Edgems 6.1
Edgems 6.2
Teacher Gems
Station Review
Ticket Time
Climb the Ladder
Partner Math
Student Gems

Digital Intervention and Enrichment resources:
https://www.mathpapa.com/practice/training/

http://www.ck12.org/algebra/

http://www.shodor.org/interactivate/activities/FractionFour/ applying operations with rational numbers to solve problems | **Exit Cards** (Formative) Small "quiz" used to determine base level of proficiency to guide planning.

Performance Task (Formative or Summative) Multi-step and multi-standard strategic thinking task. (1.2)

Tiered Assessments (Summative) Unit assessment (selected and constructed response items) at the tiered level.

Assessments (Summative) Unit assessment (selected and constructed response items) at the proficient level.

Formative Assessment digital tools (optional):
Edpuzzle
Socrative
DotStorming
Peardeck |

		[Comparing and ordering rational numbers](#) - Students compare/order rational and irrational numbers using a virtual tool.	Nearpod Quizizz

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
[EdGems Math - Course 3](#) [Teacher Gems PD Overview](#) http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com [Pear Deck](#) [Socrative](#) [Edpuzzle](#) [Quizizz](#) [Nearpod](#)	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 1: Equations	
Essential Questions	**Enduring Understandings**
- What is the purpose of an equation? - How do we apply mathematical properties/operations to solve equations?	- Equations are used to model real life problems. - Inverse operations are used to solve equations.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Apply inverse operations to solve equations. Model, create and solve multi-step equations. Classify the number of solutions to linear equations as none, one or infinite solutions.	**8.NS.1 (Supporting Standard)** Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. **8.EE.7 (Major Standard)** Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form $x = a$, $a = a$, or $a = b$ results (where a and b are different numbers). **8.EE.7b (Major Standard)**	**From the EdGems Course 3 Online Text:** Lesson Guide 1.1 Lesson Guide 1.2 Lesson Guide 1.3 1.3 Explore Teacher Gems Climb the Ladder 1.1 Partner Math 1.2 Always, Sometimes, Never 1.3 Rich Tasks Unit 1 Tic-Tac-Toe Unit 1 Performance Tasks Unit 1 **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/ http://www.ck12.org/algebra/	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(1.1-1.3) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (1.1-1.3) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(1.3) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (1.2) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. **Assessments** (Summative) Unit

Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms		assessment (selected and constructed response items) at the proficient level. ***Formative Assessment digital tools (optional):*** Edpuzzle Socrative DotStorming Peardeck Nearpod Quizizz

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
EdGems Math - Course 3 Teacher Gems PD Overview http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com Pear Deck Socrative Edpuzzle Quizizz Nearpod	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 2: Square Roots, Solving Square Roots

Essential Questions	Enduring Understandings
● What are the various methods that can be used to evaluate numerical and algebraic expressions? ● What is the purpose of an equation? ● How do we apply mathematical properties/operations to solve equations? ● Do other numbers exist besides rational numbers? Why are they necessary?	● Numerical and algebraic expressions can be simplified/evaluated using order of operations and computation of rational numbers ● Equations are used to model real life problems. ● Inverse operations are used to solve equations. ● Rational and Irrational numbers are subsets of the Real Number System and are solutions to equations.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Find the value of numerical expressions using the order of operations. Create and evaluate variable expressions. Apply and utilize mathematical properties to simplify variable expressions. Apply inverse operations to solve equations. Model, create and solve multi-step equations. Classify the number of solutions to linear equations as none, one or	**6.EE.2 (Supporting Standard)** Write, read and evaluate expressions in which letters stand for numbers. **7.NS.3 (Supporting Standard)** Solve real-world and mathematical problems involving the four operations with rational numbers. **8.NS.1 (Supporting Standard)** Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. **8.NS.2 (Supporting Standard)** Use rational approximations of	**From the EdGems Course 3 Online Text:** Lesson Guide 1.4 Lesson Guide 1.5 Lesson Guide 1.6 1.4 Explore 1.5 Explore Teacher Gems Activities 1.4 Matho 1.5 Activities 1.6 Rich Tasks Unit 1 Tic-Tac-Toe Unit 1 Performance Tasks Unit 1 **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/ http://www.ck12.org/algebra/	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(1.1-1.6) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (1.1-1.6) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(1.3,1.4,1.6) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (1.2,1.5) **Tiered Assessments** (Summative) Unit assessment (selected and

infinite solutions.

Understand and recognize that there are numbers that are not rational, and approximate them by rational numbers.

Apply knowledge of rational and irrational numbers to solve real world application problems.

Approximate/estimate square roots and *cube roots to problem solve.

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irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2).

8.EE.2 (Major Standard)
Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that $\sqrt{2}$ is irrational.

8.EE.7 (Major Standard)
Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers).

8.EE.7b (Major Standard)
Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms

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constructed response items) at the tiered level. (1.6)

Assessments (Summative) Unit assessment (selected and constructed response items) at the proficient level. (1.6)

Formative Assessment digital tools (optional):
Edpuzzle
Socrative
DotStorming
Peardeck
Nearpod
Quizizz

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
EdGems Math - Course 3 Teacher Gems PD Overview http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com Pear Deck Socrative Edpuzzle Quizizz Nearpod	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 3: Pythagorean Theorem

Essential Questions	Enduring Understandings
● Can the Pythagorean Theorem be used on all triangles? ● Without measuring tools, how can the side lengths of a right triangle be deduced? ● How can it be determined that a triangle is a right triangle?	● The Pythagorean Theorem is used to find missing side lengths of a right triangle. ● The converse of the Pythagorean Theorem is used to determine if a triangle is right.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Prove the Pythagorean Theorem. Apply the Pythagorean Theorem to real world problems. Use the Pythagorean Theorem to find the distance between two points on a coordinate plane.	**8.G.6 (Major Standard)** Explain a proof of the Pythagorean Theorem and its converse. **8.G.7 (Major Standard)** Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. **8.G.8 (Major Standard)** Apply the Pythagorean Theorem to find the distance between two points in a coordinate system.	**From the EdGems Course 3 Online Text:** Lesson Guide 2.1 Lesson Guide 2.2 Lesson Guide 2.3 2.3 Explore Teacher Gems Ticket Time 2.1 Activities 2.2 Activities 2.3 Rich Tasks Unit 2 Tic-Tac-Toe Unit 2 Performance Tasks Unit 2 **Online virtual tools to explore and game play:** Applications of the Pythagorean Theorem--Creating Visual Models Pythagorean Theorem Student Practice Pythagorean Theorem Self Checking Task Cards	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(2.1-2.3) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (2.1-2.3) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(2.2,2.3) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (2.2,2.3) **Tiered Assessments** (Summative) Unit assessment (selected and

| | | **Digital Intervention and Enrichment resources:**
https://www.mathpapa.com/practice/training/

http://www.ck12.org/algebra/ | constructed response items) at the tiered level. (2.3)

Assessments (Summative) Unit assessment (selected and constructed response items) at the proficient level. (2.3)

Formative Assessment digital tools (optional):
Edpuzzle
Socrative
DotStorming
Peardeck
Nearpod
Quizizz |

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
EdGems Math - Course 3 Teacher Gems PD Overview http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com Pear Deck Socrative Edpuzzle Quizizz Nearpod	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 4: Functions	
Essential Questions	**Enduring Understandings**
● What is a function? How are functions used? ● How is a linear function recognized? ● How are proportional relationships recognized? ● How are proportional relationships and linear equations related? ● Do all linear equations model proportional relationships?	● To be a function, every input has exactly one output. Functions can help represent real-life situations. ● A linear function is recognized by a steady rate of change ● All proportional relationships are linear equations ● Not all linear equations are proportional relationships

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Learn how to determine if a relationship is a function. Understand the connections between proportional relationships, lines, and linear equations. Interpret the constant of proportionality as the slope of the graph Calculate the slope of a line from a graph, table or two ordered pairs.	**8.EE.5 (Major Standard)** Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. **8.EE.6 (Major Standard)** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. **8.F.1 (Major Standard)** Understand that a function is a rule that assigns to each input exactly one output. The	**From the EdGems Course 3 Online Text:** Lesson Guide 3.1 Lesson Guide 3.2 Lesson Guide 3.3 Lesson Guide 3.4 3.3 Explore 3.4 Explore Activities 3.1 Relay 3.2 Climb the Ladder 3.3 Partner Math 3.4 Rich Tasks Unit 3 Tic-Tac-Toe Unit 3 Performance Tasks Unit 3 **Online virtual tools to explore and game play:** Desmos Card Sort Desmos Polygraph Desmos Slope Activity **Digital Intervention and Enrichment**	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(3.1-3.4) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (3.1-3.4) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(3.1,3.4) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (3.2,3.4) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the

| graph of a function is the set of ordered pairs consisting of an input and the corresponding output. | **resources:**
https://www.mathpapa.com/practice/training/

http://www.ck12.org/algebra/ | tiered level. (3.4)

Assessments (Summative) Unit assessment (selected and constructed response items) at the proficient level. (3.4)

Formative Assessment digital tools (optional):
Edpuzzle
Socrative
DotStorming
Peardeck
Nearpod
Quizizz |

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
EdGems Math - Course 3 Teacher Gems PD Overview http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com Pear Deck Socrative Edpuzzle Quizizz Nearpod	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 5: Linear Functions

Essential Questions	Enduring Understandings
- How is a linear function recognized? - How do you write a linear equation based on graphs and key information? - How do you interpret non-linear real-world graphs?	- A linear function is recognized by a steady rate of change. - Use the equation y=mx+b to write the equation of the line. - Identify where non-linear graphs increase and/or decrease.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Graph linear functions from an equation Write equations for linear functions based on graphs or key information Convert other forms into slope-intercept form Interpret and compare functions Describe qualitative features of a graph (increasing, decreasing, linear and nonlinear)	**8.F.2 (Major Standard)** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions) **8.F.3 (Major Standard)** Interpret the equation $y = mx + b$ as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. **8.F.4 (Major Standard)** Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values.	**From the EdGems Course 3 Online Text:** Lesson Guide 4.1 Lesson Guide 4.2 Lesson Guide 4.3 Lesson Guide 4.4 Lesson Guide 4.5 Lesson Guide 4.6 4.1 Explore 4.2 Explore 4.4 Explore 4.6 Explore Teacher Gems Four Corners 4.1 Matho 4.2 Activities 4.3 Activities 4.4 Activities 4.5 Activities 4.6 Rich Tasks Unit 4 Tic-Tac-Toe Unit 4 Performance Tasks Unit 4	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(4.1-4.6) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (4.1-4.6) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(4.3,4.5,4.6) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (4.2,4.3,4.4) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. (4.6)

	8.F.5 (Major Standard) Describe qualitatively the functional relationship between two quantities by analyzing a graph . Sketch a graph that exhibits the qualitative features of a function that has been described verbally. **8.EE.6 (Major Standard)** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation y =mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b.	**Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/ http://www.ck12.org/algebra/	**Assessments** (Summative) Unit assessment (selected and constructed response items) at the proficient level. (4.6) ***Formative Assessment digital tools (optional):*** Edpuzzle Socrative DotStorming Peardeck Nearpod Quizizz

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
EdGems Math - Course 3 Teacher Gems PD Overview http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com Pear Deck Socrative Edpuzzle Quizizz Nearpod	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 6: Systems of Equations	
Essential Questions	**Enduring Understandings**
● What methods can be used to solve pairs of simultaneous linear equations in two variables? ● What is the solution to a system of equations when graphed on a coordinate plane?	● Simultaneous linear equations in two variables can be solved using graphing and substitution methods. ● The solution to a graphed system of equations is the point of intersection, no solution if the lines are parallel, and infinite solutions if the lines are the same.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Determine if a system of two linear equations are parallel, intersecting or the same line. Solve a system by graphing, substitution and elimination. Write and solve systems for real-world situations. Apply systems of equations to determine the fraction that represents a repeating decimal.	**8.EE.8a (Major Standard)** Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because the points of intersection satisfy both equations simultaneously. **8.EE.8b (Major Standard)** Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. **8.EE.8c (Major Standard)** Solve real-world and mathematical problems leading to two linear equations in two variables. **8.NS.1 (Major Standard)** Know that numbers that are not	**From the EdGems Course 3 Online Text:** Lesson Guide 5.1 Lesson Guide 5.2 Lesson Guide 5.3 Lesson Guide 5.4 Lesson Guide 5.5 Lesson Guide 5.6 5.1 Explore 5.2 Explore 5.4 Explore 5.6 Explore Teacher Gems Always, Sometimes, Never 5.1 Partner Math 5.2 Ticket Time 5.3 Activities 5.4 Activities 5.5 Matho 5.6 Rich Tasks Unit 5 Tic-Tac-Toe Unit 5 Performance Tasks Unit 5	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(5.1-5.6) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (5.1-5.6) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(5.4,5.5) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (5.3,5.5) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. (5.6)

| rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers, show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. | **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/

 http://www.ck12.org/algebra/

 3-Act Math Task - Problem based Activity: Playing Catch Up | **Assessments** (Summative) Unit assessment (selected and constructed response items) at the proficient level. (5.6)

 Formative Assessment digital tools (optional):
 Edpuzzle
 Socrative
 DotStorming
 Peardeck
 Nearpod
 Quizizz |

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
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Unit 7: Transformations

Essential Questions	Enduring Understandings
● Do performing transformations on figures change the shape or size of the original figure? ● How does performing transformations to a figure on a coordinate plane affect the coordinates?	● Translations, Reflections, and Rotations do not change the shape or size of a figure. Dilating a figure does affect the size but not the shape of a figure. ● A rule can be written when a figure is transformed on a coordinate plane which is written as an ordered pair.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Perform transformations on points and polygons. Learn that reflections, translations, and rotations create congruent figures while dilations create similar figures. Write and/or use transformation rules to describe transformations Describe a sequence of transformations that can be performed to map	**8.G.1 (Major Standard)** Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines. **8.G.2 (Major Standard)** Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. **8.G.3 (Major Standard)**	**From the EdGems Course 3 Online Text:** Lesson Guide 7.1 Lesson Guide 7.2 Lesson Guide 7.3 Lesson Guide 7.4 Lesson Guide 7.5 7.2 Explore 7.4 Explore Teacher Gems Ticket Time 7.1 MATHO 7.2 Always, Sometimes, Never 7.3 Activities 7.4 Activities 7.5 Rich Tasks Unit 7 Tic-Tac-Toe Unit 7 Performance Tasks Unit 7 **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/tr	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(7.1-7.5) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (7.1-7.5) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(7.4,7.5) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (7.4,7.5) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. (7.5)

	Describe the effect of dilations, translations, rotations, and reflections on two dimensional figures using coordinates. **8.G.4 (Major Standard)** Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them.	aining/ http://www.ck12.org/algebra/	**Assessments** (Summative) Unit assessment (selected and constructed response items) at the proficient level. (7.5) ***Formative Assessment digital tools (optional):*** Edpuzzle Socrative DotStorming Peardeck Nearpod Quizizz

Resources: Essential Materials, Supplemental Materials, Links to Best Practices	**Instructional Adjustments:** Modifications, Student Difficulties, Possible Misunderstandings
EdGems Math - Course 3 Teacher Gems PD Overview http://www.socrative.com/ www.kahoot.it www.shodor.org www.Insidemathematics.org www.xyzsolve.com www.ck12.org www.mathjong.com Pear Deck Socrative Edpuzzle Quizizz Nearpod	*Modifications/Student difficulties/Common errors* ● Emphasize note taking strategies ● Use guided notes when necessary ● Revisit and study notebook ● Create vocabulary notecards ● Use tools/manipulatives/models ● Reword application problems ● Use handouts/graphic organizers ● Review peer work and provide feedback ● Complete error analysis process. ● Create a study guide for intervention ● Build a glossary notebook

Unit 8: Angle Relationships

Essential Questions	Enduring Understandings
● How do geometric properties and logical reasoning prove and make conclusions about relationships in geometry?	● Properties of parallel lines and triangles justify mathematically the relationships in geometry.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Connect previous understanding of angle relationships formed by a transversal and apply their skills of equation solving to find the measures of angles. Discover the sum of three interior angles in a triangle. Determine the relationship between interior and exterior angles of a triangle. Determine if two triangles are similar using slope and finding missing side lengths.	**8.G.5 (Major Standard)** Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. **8.EE.6 (Major Standard)** Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; derive the equation $y = mx$ for a line through the origin and the equation $y = mx + b$ for a line intercepting the vertical axis at b.	**From the EdGems Course 3 Online Text:** Lesson Guide 6.1 Lesson Guide 6.2 Lesson Guide 6.3 Lesson Guide 6.4 Lesson Guide 6.5 6.4 Explore 6.5 Explore Ticket Time 6.1 MATHO 6.2 Activities 6.3 Partner Math 6.4 Activities 6.5 Rich Tasks Unit 6 Tic-Tac-Toe Unit 6 **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/ http://www.ck12.org/algebra/	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(6.1-6.5) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (6.1-6.5) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(6.5) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (6.3,6.5) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. (6.5)

		Geogebra Parallel Lines Activity - activity that allows students to explore the properties of angles that are formed by parallel lines and a transversal	**Assessments** (Summative) Unit assessment (selected and constructed response items) at the proficient level. (6.5) ***Formative Assessment digital tools (optional):*** Edpuzzle Socrative DotStorming Peardeck Nearpod Quizizz

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Unit 9: Volume	
Essential Questions	**Enduring Understandings**
● How do you find the volume of cones, cylinders, or spheres? ● How do you find missing dimensions given the volume for cones, cylinders, or spheres?	● Use the appropriate volume formula, substitute in the given values, and solve for the volume. ● Use the appropriate volume formula, substitute in the given values, and solve for the missing dimension.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres.	**8.G.9 (Additional Standard)** Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems.	**From the EdGems Course 3 Online Text:** Lesson Guide 9.1 Lesson Guide 9.2 Lesson Guide 9.3 9.2 Explore Partner Math 9.1 Climb the Ladder 9.2 Masterpiece 9.3 Rich Tasks Unit 9 Tic-Tac-Toe Unit 9 Performance Tasks Unit 9 **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/ http://www.ck12.org/algebra/ Exploring 3D Shapes with Food	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(9.1-9.3) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning. (9.1-9.3) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(9.3) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task. (9.2,9.3) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. (9.3)

			Assessments (Summative) Unit assessment (selected and constructed response items) at the proficient level. (9.3) ***Formative Assessment digital tools (optional):*** Edpuzzle Socrative DotStorming Peardeck Nearpod Quizizz

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Unit 10: Exponent Properties

Essential Questions	Enduring Understandings
- What properties can be used to simplify expressions containing exponents? - How do you compute expressions involving numbers written in scientific notation?	- The properties of exponents can be used to simplify expressions with exponents. - Use the properties of exponents along with basic numerical operations to compute the answer.

Core Content		Instructional Actions	
Objectives	**Alignment to NJSLS**	**Recommended Activities/Strategies**	**Assessment Check Points**
Learn properties of exponents and create equivalent expressions. Convert standard numbers to scientific notation and vice versa.. Understand and apply scientific notation to simplify problems and problem solve.	**8.EE.1 (Major Standard)** Know and apply the properties of integer exponents to generate equivalent numerical expressions **8.EE.3 (Major Standard)** Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. **8.EE.4 (Major Standard)** Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading).	**From the EdGems Course 3 Online Text:** Lesson Guide 8.1 Lesson Guide 8.2 Lesson Guide 8.3 Lesson Guide 8.4 8.1 Explore 8.2 Explore 8.4 Explore Ticket Time 8.1 Activities 8.2 Always, Sometimes, Never 8.3 Activities 8.4 Rich Tasks Unit 8 Tic-Tac-Toe Unit 8 Performance Tasks Unit 8 **Digital Intervention and Enrichment resources:** https://www.mathpapa.com/practice/training/ http://www.ck12.org/algebra/	**Target Tracker** (Self-Assessment) Tracker for students to use to chart progress throughout unit.(8.1-8.4) **Exit Card** (Formative) Small "quiz" used to determine base level of proficiency to guide planning.(8.1-8.4) **Gem Challenge** (Formative or Summative) Online standards based items for use after standard has been covered.(8.2,8.4) **Performance Task** (Formative or Summative) Multi-step and multi-standard strategic thinking task.(8.2,8.4) **Tiered Assessments** (Summative) Unit assessment (selected and constructed response items) at the tiered level. (8.4)

	Interpret scientific notation that has been generated by technology.		**Assessments** (Summative) Unit assessment (selected and constructed response items) at the proficient level. (8.4) ***Formative Assessment digital tools (optional):*** Edpuzzle Socrative DotStorming Peardeck Nearpod Quizizz

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