

Math Curriculum – Grade 7
2023-2024



Approved by the Academy for Urban Leadership Board of
Trustees

April 2023

Founded in 2010 in Perth Amboy, New Jersey, the Academy for Urban Leadership Charter School is one of Middlesex County's comprehensive Public Charter Schools that serves students in seventh through twelfth grades. The school operates under the terms of a charter granted by the New Jersey Department of Education. AUL offers an advanced academic track and AP courses.

AUL has designed its curriculum to focus on Four Academies which include Applied Science, Law/Public & Safety, Business & Technology and Human Development. Students are given an opportunity to explore interests and take courses related to their chosen field, proving students with an opportunity to utilize knowledge in their everyday life.

MISSION STATEMENT OF ACADEMY FOR URBAN LEADERSHIP CHARTER SCHOOL:

To employ an educational design and experience that merges the highest standards of academic excellence while fostering convictions and commitment to social and economic justice.

Goals:

- Provide each student the resources necessary to excel to his/her maximum ability
- Prepare students for success in post-secondary education
- Prepare students with the skills for the workforce
- Prepare students to be leaders in this community
- Prepare students for their civic responsibilities and instill values of good citizenship



UNIT OVERVIEW

CONTENT AREA: Mathematics:	UNIT: The Number System
TARGET COURSE/GRADE LEVEL: Grade 7	SUGGESTION TIMEFRAME: 7 weeks
TOPIC: Rational Numbers	CHAPTERS COVERED: <ul style="list-style-type: none">● Adding and Subtracting Rational Numbers● Multiplying and Dividing Rational Numbers
UNIT SUMMARY/ UNIT RATIONALE: Unit 1 builds on the student’s understanding of rational numbers concepts in grade 6 to develop fluency with addition, subtraction, multiplication and division of rational numbers and to use these skills in problem solving context. Success with problem solving an developing fluency with rewriting linear expressions and solving linear equations presented in Unit 2 will be dependent upon the completion of the work with rational numbers in Unit1	
INTERDISCIPLINARY CONNECTIONS / PROBLEM-BASED LEARNING: LA.7.W.7.1- Write arguments to support claims with clear reasons and relevant evidence. Science-MS-PS3-4 – Plan an investigation to find change in a daily temperatures for a specific location. SCI.7-8.5.3.8.C.1-Model the effect of positive and negative changes in population size on a symbiotic pairing 6.2.8.D.1.a Demonstrated an understanding of pre-agricultural and post-agrarian periods in terms of relative length of time. Physical Education: In many games, positive and negative numbers are needed	
ESSENTIAL QUESTIONS: <ul style="list-style-type: none">● In what ways are positive and negative numbers used in real world?● How do you perform addition, subtraction, multiplication, and division of integers and determine the reasonableness of a solution?● How do you perform addition, subtraction, multiplication, and division of fractions and determine the reasonableness of a solution?● How can rational numbers help solve real world problems involving area/perimeter, cooking, remodeling,etc?	



LEARNING TARGETS

NEW JERSEY STUDENT LEARNING STANDARDS:

- 7.NS.1 : Apply and Extend previous understanding of addition and subtraction to add and subtract rational numbers, represent addition and subtraction on a horizontal or vertical number line diagram.**
- 7.NS.2 : Apply and Extend previous understandings of multiplication and division of fractions to multiply and divide rational numbers**
- 7.NS.3: Solve real-world and mathematical problems involving the four operations with rational numbers.**

21st Century Skills, 21ST CENTURY LIFE AND CAREER and TECHNOLOGY Standards:

- **Critical Thinking and Problem Solving**
- **Creativity and Innovation**
- **Communication and Collaboration**
- **Flexibility and Adaptability**
- **Initiative and Self-Direction**
- **Social and Cross-Cultural Skills**
- **Productivity and Accountability**
- **Informational Literacy Skills**
- **Media Literacy Skills**
- **Information, Communication, and Technology(ICT) Literacy**

CPI #:

CUMULATIVE PROGRESS INDICATORS (CPI) from NJCCCS if applicable:

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Content: What information do students need to know?

- **Fluently divide, whole numbers and fractions**
- **Fluently add, subtract, multiply, and divide decimals**
- **Identify and represent integers**
- **Identify and describe absolute values of integers**
- **Describe quantities with positive and negative integers.**

Process: What will students be able to do with the information?

Student will be able to

- **represent addition and subtraction on a horizontal number line.**
- **represent addition and subtraction on a vertical number line.**
- **interpret sums of rational numbers in real-world situations.**
- **show that the distance between two rational numbers on the number line is the absolute value of their difference.**
- **multiply and divide signed numbers.**
- **use long division to convert a rational number to a decimal.**
- **add and subtract rational numbers.**
- **multiply and divide rational numbers using the properties of operations.**
- **apply the convention of order of operations to add, subtract, multiply and divide rational numbers.**
- **solve real world problems involving the four operations with rational numbers.**
- **add and subtract linear expressions having rational coefficients, using properties of operations.**
- **factor and expand linear expressions having rational coefficients, using properties of operations.**
- **write expressions in equivalent forms to shed light on the problem and interpret the relationship between the quantities in the context of the problem**

Modifications:

Special Education	ESL	At-risk	Gifted and Talented
<p><u>7.NS.A.1: Interactive Number Line Using a Number Line Exploration</u></p> <p>Number Line, interactive number line, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504 plans</p>	<p>Number Line, interactive number line, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504 plans</p>	<p>Number Line, interactive number line, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504 plans</p>	<p>Number Line, interactive number line, clarify directions, vocabulary usage, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504 plans</p>
<p><u>7.NS.A.1.b Find sum of integers Using Integer Counters to Find Sums Exploration: Using a Number Line</u></p> <p>Use integer chips number line, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Use integer chips number line, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Use integer chips number line, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Use integer chips number line, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>
<p><u>7.NS.A.1.d Find sums of rational numbers. Exploration: Adding Rational Numbers</u></p> <p>Clarify directions, small group work, one on one instruction,</p>	<p>Clarify directions, small group work, one on one</p>	<p>Clarify directions, small group work, one on one</p>	<p>Clarify directions, small group work, one on one</p>

<p>differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>
<p>7.NS.A.1.c. Find difference of integers Exploration: Using Integer Counters to Subtract Integers</p> <p>Number line model, integer chips, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Number line model, integer chips, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Number line model, integer chips, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Number line model, integer chips, clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>
<p>7.NS.A.1.d Find difference of rational numbers and find distances between numbers on a number line . Exploration: Finding Distances on an Number Line</p> <p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities,</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities,</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities,</p>

<p>and/or modifications per a student's IEP or 504</p> <p>7.N.S.A.2.a Find products of integers Exploration: Understanding Products Involving Negative Integers</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>7.NS.A.2.b. Find quotients of integers Exploration: Understanding Products Involving Negative Integers</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>7.NS.A.2.d Convert between different forms of rational numbers.</p>	<p>manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p> <p>Multiplication chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>
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<p>Place value chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Place value chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Place value chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Place value chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>
<p>7.NS.A.2.c Find products of rational numbers. Exploration: Finding Products of Rational Numbers</p>			
<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Place value chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Place value chart, Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>
<p>7.NS.A.2.c Find quotients of rational numbers Exploration: Finding Quotients of Rational Numbers</p>			
<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or modifications per a student's IEP or 504</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or</p>	<p>Clarify directions, small group work, one on one instruction, differentiated lessons, enrichment activities, manipulatives, other accommodations and/or</p>

	modifications per a student's IEP or 504	modifications per a student's IEP or 504	modifications per a student's IEP or 504

INSTRUCTION

CONTENT VOCABULARY:

Absolute value, additive Inverse, graph, integer, negative integer, opposites, positive integer, zero par, bar notation, common denominator, least common denominator, like fractions, rational numbers, repeating decimal, terminating decimal, unlike fractions.

ASSESSMENTS (BENCHMARK, FORMATIVE, SUMMATIVE, ALTERNATIVE):

- **Daily Exit Quizzes**
- **End of Chapter Quizzes**
- **End of Unit Quizzes**
- **Cumulative Practice Test**

INSTRUCTIONAL RESOURCES (ELA – INCLUDE VARIOUS LEVELS OF TEXT):

7.NS.A.1 Comparing Freezing Points

<https://tasks.illustrativemathematics.org/content-standards/7/NS/A/1/tasks/314>

7.NS.A.1b-e Difference of Integers

<https://tasks.illustrativemathematics.org/content-standards/7/NS/A/1/tasks/1987>

7.NS.A.2 Why is a Negative times a Negative Always Positive

<https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks/1667>

7.NS.A.2d Equivalent fractions approach to non-repeating decimals

<https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks/604>

7.NS.A.2d Repeating decimal as approximation

<https://tasks.illustrativemathematics.org/content-standards/7/NS/A/2/tasks/593>

7.EE.A.1 Writing Expressions

<https://tasks.illustrativemathematics.org/content-standards/7/EE/A/1/tasks/541>

7.EE.A.2. Ticket to Ride

<https://tasks.illustrativemathematics.org/content-standards/7/EE/A/2/tasks/1450>

Technology resources:

Various websites

- <http://www.state.nj.us/education/modelcurriculum/math/7u1.shtml>

User Name: model Password: curriculum

- <https://www.insidemathematics.org/performance-assessment-tasks>
- www.mathplayground.com • www.teacherspayteachers.com
- www.kahnacademy.org
- www.xpmath.com
- www.illustrativemathematics.org
- www.mathbitsnotebook.com
- <http://map.mathshell.org/>
- <https://parcc.pearson.com/practice-tests/math/>
- <https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8/file/133021>

Provides fluency exercises along with recommended use

- <https://www.engageny.org/resource/grade-7-mathematics-module-2>

Engage NY - Grade 7: Rational Numbers • Teacher materials

- Student materials
- Copy ready materials
- Module overview
- Assessments
- <https://www.engageny.org/resource/grade-7-mathematics-module-4>

Engage NY - Grade 7: Percent and Proportional Relationships

- Teacher materials
- Student materials
- Copy ready materials
- Module overview
- Assessments

UNIT OVERVIEW

CONTENT AREA:
Mathematics

UNIT: 3
Expressions and Equations

TARGET COURSE/GRADE LEVEL:

7th

SUGGESTION TIMEFRAME:

6 weeks

<p>TOPIC: Algebraic Expression</p>	<p>CHAPTERS COVERED: Expressions Equations and Inequalities</p>
<p>UNIT SUMMARY/ UNIT RATIONALE:</p> <p>In Unit2, students will learn how to simplify and evaluate algebraic expressions. Students will solve one two step equations and inequalities involving addition, subtraction, multiplication and division.</p>	
<p>INTERDISCIPLINARY CONNECTIONS / PROBLEM-BASED LEARNING:</p> <p>Career Education- A jeweler can make the number of bracelets, y, in x amount of hours and is represents by the equation $y=3/4x$. What is the constant of proportionality? Create a table that values to represent how many bracelets the jeweler can make in 1, 2, 3, and 4 hours.</p> <p>Health/PE- Can you analyze the nutritional needs of a long-distance cyclist to help him plan his calorie intake? This activity provides a real-life context for handling data, converting units and proportional reasoning.</p> <p>English Language Arts & Literacy- Explain why the ratios x/y and $x+z/y$ for a proportion only when $z=0$.</p> <p>Science- Apply the rate of change: Mountain Slopes- Mt. Washington, in New Hampshire is the highest mountain in the northeastern United States. Although it is shorter than many mountains in western United States, it still offers some challenging hiking. One part of its Great Gulf Trail rises 1,600ft in 0.8 mi! When you plan a hike you need to consider elevation gain as well as the length of trail. Create a graph to show the average elevation gain per hour for 4 popular trails of Mt. Washington.</p> <p>History/Social Studies- From slugging percentages to earned run averages (ERAs), students explore the mathematics of baseball using spreadsheets and create an informative presentation that makes the national pastime even more enjoyable for its fans.</p> <p>Technical Subjects Automotive mechanics diagnose and repair mechanical problems. An automotive mechanic must inspect a car and analyze its problems to determine the necessary adjustments to make. Use proportional reasoning to identify and track the relationship of number of repairs to the labor time. Use tables and graphs to support conclusions.</p> <p>World Languages The word proportion is taken from the Greek word proportione, which means “for its own share.” Write a journal entry as to why a proportionate amount is a quantity that has its own share.</p> <p>Arts: Students will analyze a piece of artwork, taking various measurements from the item. Proportions will be created and tested in order to see if the item is proportional to a real object and figure out how large or small it would be in real life.</p>	
<p>ESSENTIAL QUESTIONS:</p> <p>des</p> <ul style="list-style-type: none"> • How can we use mathematical models as tools to be best describe and help explain real-life situations? 	

- **How can use numbers and symbols to represent mathematical ideas?**
- **How can you describe the relationship between equivalent quantities expressed algebraically in different forms in a problem context and explain their equivalence in the light of context of problem?**

LEARNING TARGETS

NEW JERSEY STUDENT LEARNING STANDARDS:

7.EE.1 - Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.

7.EE.2 - Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.

7.EE.3 - Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies.

7.EE.4 - Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.

7.EE.4a - Solve word problems leading to equations of the form $px + q = r$ and $p(x + q) = r$, where p , q , and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.

7.EE.4b - Solve word problems leading to inequalities of the form $px + q > r$ or $px + q < r$, where p , q , and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.

7.NS.3 - Apply and extend previous understanding of operations with fractions to add, subtract, multiply, and divide rational numbers.

21st Century Skills, 21ST CENTURY LIFE AND CAREER and TECHNOLOGY Standards:

Lessons, where appropriate, incorporate multiple perspectives to infuse cultural and global awareness.

- Learning incorporates skills focusing on financial, economic, business, and entrepreneurial literacy.

- Lessons integrate a focus on civic literacy so that student can better understand the rights and obligations of citizenship.

- Learning advocates for health literacy as a critical component of a healthy lifestyle and the ability to make good health-related decisions.

- Students explore areas that support environmental literacy, including society's impact on the environment and what can be done to support environmental solutions.

- Lessons, activities, and assessments require creativity and innovation on the part of the students. They are required to create projects and products as examples of mastery in each unit.

Critical thinking and problem solving skills are a core component of learning and assessment throughout this curriculum. Students are required, in each unit, to advance their learning through all levels of Bloom's Taxonomy to address the evaluation, synthesis, and creation of products using learning at the highest levels. Problem-solving is a recurring theme in the curriculum as students must seek ways to creatively apply the concepts to solve problems rather than simply remember the material.

- Communication and collaboration is crucial for student success as learners. Throughout this curriculum, students must be able to communicate deep understanding through open ended responses (both orally and in writing). In addition, students are often required to work collaboratively with their peers, which promotes the ability to succeed in the area of social cooperative work, increases communication skills, and promotes leadership and responsibility.

- Students must be information literate, i.e. they must be able to find and use information effectively, in order to succeed in class as learning activities require independent research of relevant information outside of the provided textbook and/or resources.
- Learning and assessment activities support the push to make students media literate, as they are often required to analyze, evaluate, and create messages in a wide variety of media modes, genres, and formats.
- In order to succeed in this course, students must be able to use technology as a tool in order to research, organize, evaluate, and communicate information.
- Activities in the curriculum help develop life and career skills in all students by promoting flexibility and adaptability, requiring initiative and self-direction in the learning process, supporting social and cross-cultural skills in both content and teamwork efforts, and measuring productivity and accountability through independent and group assignment completion

CPI #: **CUMULATIVE PROGRESS INDICATORS (CPI) from NJCCCS if applicable:**

Content: What information do students need to know?

From 6th grade

Read and interpret parts of an expression by using mathematical terms and viewing expressions as single entities.

Write and evaluate expressions.

Identify equivalent expressions by applying the properties of operations

Process: What will students be able to do with the information?

To evaluate and simplify algebraic expressions.

- To describe the relationships and extend terms in arithmetic sequences.
- To explore patterns in sequences of geometric figures.
- To identify and use mathematical properties to simplify algebraic expressions.
- To apply the Distributive Property to rewrite algebraic expressions.
- To add and subtract linear expressions.
- To factor linear expressions using models.
- To read and write integers and find the absolute value of an integer.
- To write and solve addition, subtraction, multiplication, and division equations.
- To solve multiplication and division one step equations is like solving one-step addition and subtraction equations.
- To perform identical operations on each side of the equals sign and its significance.
- To write and solve inequalities and compare inequalities to each other

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Modifications:

Special Education	ESL	At-risk	Gifted and Talented
7.EE.A1 – Find the sum and difference of linear expressions	Number line, visual diagrams, manipulatives, one on one instruction, differentiated lessons, enrichment activities, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.	Number line, visual diagrams, manipulatives, one on one instruction, differentiated lessons, enrichment activities, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.	Number line, visual diagrams, manipulatives, one on one instruction, differentiated lessons, enrichment activities, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.
7.EE.A.2-Apply Distributive property to generate equivalent expressions by factoring and expanding	Visual diagrams, multiplication chart, differentiated lessons, clarify directions, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.	Visual diagrams, multiplication chart, differentiated lessons, clarify directions, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.	Visual diagrams, multiplication chart, differentiated lessons, clarify directions, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.
7.EE.B3- Write and solve one step equation	Visual diagrams, number line differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.	Visual diagrams, number line differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.	Visual diagrams, number line differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student’s IEP/504 plans.
7.EE.B.3 and 7.EE.B.4a-Write and	Visual diagrams, number line, multiplication chart,	Visual diagrams, number line, multiplication chart,	Visual diagrams, number line, multiplication chart,

<p>solve two step equation</p>	<p>clarify directions, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans.</p>	<p>clarify directions, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>	<p>clarify directions, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>
<p>7.EE.B.4b- Write inequalities and represent solutions of inequalities on number line</p>	<p>Vocabulary usage, Visual diagrams, number line, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>	<p>Vocabulary usage, Visual diagrams, number line, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>	<p>Vocabulary usage, Visual diagrams, number line, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>
<p>7.EE.B.4b and 7.EE.B3 -Write and solve inequalities</p>	<p>Visual diagrams, number line, multiplication chart, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>	<p>Visual diagrams, number line, multiplication chart, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>	<p>Visual diagrams, number line, multiplication chart, one on one group activity differentiated lessons, enrichment activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans</p>
<p>7.EE.4.b-7.EE.3.b- Write and solve two step inequalities</p>	<p>Visual diagrams, multiplication chart, Clarify directions, one on one group activity differentiated lessons, enrichment</p>	<p>Visual diagrams, multiplication chart, Clarify directions, one on one group activity differentiated lessons, enrichment</p>	<p>Visual diagrams, multiplication chart, Clarify directions, one on one group activity differentiated lessons, enrichment</p>

	activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans	activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans	activities, manipulatives, modeling and specific other accommodations/modifications as per student's IEP/504 plans
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INSTRUCTION

CONTENT VOCABULARY:

Additive Identity Property, algebra, algebraic expression, arithmetic sequence, Associative Property, coefficient, Commutative Property, constant, counterexample, define a variable, Distributive Property, equivalent expressions, factor, factored form, like terms, linear expressions, monomial, Multiplicative Identity Property, Multiplicative Property of Zero, property, sequence, simplest form, term, variable, Addition Property of Equality, Addition Property of Inequality, coefficient, Division Property of Equality, Division Property of Inequality, equation, equivalent equation, inequality, Multiplication Property of Equality, Multiplication of Inequality, solution, Subtraction Property of Equality, Subtraction Property of Inequality, twostep equation, two-step inequality

ASSESSMENTS (BENCHMARK, FORMATIVE, SUMMATIVE, ALTERNATIVE):

- **Daily Exit Quizzes**
- **End of Chapter Quizzes**
- **End of Unit Quizzes**
- **Cumulative Practice Test**

INSTRUCTIONAL RESOURCES (ELA – INCLUDE VARIOUS LEVELS OF TEXT):

Written responses to questions relating to Big Ideas and Essential Questions

- Exit Tickets
- STEM Project from Envision 2.0 Text
- Topic Readiness Questions
- Curricular Framework performance tasks: <http://www.state.nj.us/education/cc/cs/frameworks/math/>
- Student Summaries
- Skill Benchmark
- Teacher-Created Rubrics
- Lesson and Checkpoint Quizzes
- Performance Tasks or hands-on activity labs
- PARCC released items: <http://parcconline.org/samples/mathematics/grade-7-speed>

Technology resources:

Various websites

- <http://www.state.nj.us/education/modelcurriculum/math/7u2.shtml>

User Name: model Password: curriculum

- <https://www.insidemathematics.org/performance-assessment-tasks>

- www.mathplayground.com
- www.teacherspayteachers.com
- www.kahnacademy.org
- www.xpmath.com
- www.illustrativemathematics.org
- www.mathbitsnotebook.com
- <http://map.mathshell.org/>
- <https://parcc.pearson.com/practice-tests/math/>
- <https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8/file/133021>
Provides fluency exercises along with recommended use
- <https://www.engageny.org/resource/grade-7-mathematics-module-3>
Engage NY - Grade 7: Expressions and Equations
- Teacher materials
- Student materials
- Copy ready materials
- Module overview
- Assessments Additional General Modifications.

UNIT OVERVIEW

CONTENT AREA: Mathematics	UNIT: Statistics and Probability
TARGET COURSE/GRADE LEVEL: Statistics and Probability/7th grade	SUGGESTION TIMEFRAME: 30-35 days
TOPIC: Statistics and Probability	CHAPTERS COVERED:

UNIT SUMMARY/ UNIT RATIONALE:

This unit will introduce students to the concept of solving problems that involve different types of events. They will examine sampling, compare two populations, and distinguish properties of events. Permutations, combinations, and probability will be learned to help solve problems. The fundamental counting principal will also be utilized throughout the unit.

INTERDISCIPLINARY CONNECTIONS / PROBLEM-BASED LEARNING:

Career Education- A vendor makes tacos topped with lettuce, tomatoes, cheese, sour cream and guacamole. If you order a taco with 3 randomly chosen toppings, what is the probability you will get one with guacamole. As an air pilot, you know the rows are numbered from 1 to 30, and there are six seats per row, three on each side of the aisle. Apply knowledge of probability to

understanding the following: How many seats are in the airplane? What are your chances of sitting in row number 7? What are your chances of sitting in a window seat? What are your chances of sitting in an "A" seat? What are your chances of sitting in an even-numbered row?

Health/PE- Research how many events take place in a track and field meet. In how many ways can the meet director arrange the events?

English Language Arts & Literacy- Describe a possible simulation to solve the following problem. You guess on six heads/tails questions. What is the probability that you guess exactly two answers correctly

Science- A wildlife biologist catches and releases 20 fish from two different lakes at random locations. He catches 10 fish at Lake Palmer and 10 fish at Lake Dalton. He measures the length of each fish to the nearest quarter of an inch. Based on the samples, what generalization can be made?

First Quartile 6.75 5.5

Second Quartile (Median) 10.25 6.75

Third Quartile 13 7.5

History/Social Studies- Analyze data and trends from national crime statistics in addition to reading the expository text to: (1) create community service posters or leaflets to inform their peers of trends and statistics of teen crime and potential consequences and, (2) write a persuasive essay that responds to the ongoing debate of sentencing juveniles as adults for crimes committed as teens.

Technical Subjects- An engineer chooses three programs from the original 16 to use for a project. He picks the 3 programs in a specific order. What is the probability that another engineer, choosing at random, picks the same three programs in the same order?

World Languages: Students will create and analyze data from a survey created to see how many students are bilingual and to what extent they understand the language. Statistics will be discovered on the different languages spoken and how fluently they are spoken or understood.

Arts: Students will complete theoretical and experimental probability experiments using dancers and the number of turns that can be completed in a specified amount of time. Students will research how long it takes to complete specific turns and will then complete the experiment in order to be able to compare the results.

ESSENTIAL QUESTIONS:

How can you predict the outcome of future events through designing and using simulations?

How can you generate multiple samples of the same size to gauge the variation in estimates or predictions?

How can you analyze whether a sample is representative of a population?

How can experimental and theoretical probabilities be used to make predictions and draw conclusions?

LEARNING TARGETS

NEW JERSEY STUDENT LEARNING STANDARDS:

7. SP.1 - Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.
7. SP.2 - Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.
- 7.SP.3 - Informally assess the degree of visual overlap of two numerical data distributions with similar variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.
- 7.SP.4 - Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.
- 7.SP.5 - Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
- 7.SP.6 - Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.
- 7.SP.7 - Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.
- 7.SP.7a - Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.
- 7.SP.7b - Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.
- 7.SP.8 - Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- 7.SP.8a - Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
- 7.SP.8b - Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., "rolling double sixes"), identify the outcomes in the sample space which compose the event.
- 7.SP.8c - Design and use a simulation to generate frequencies for compound events.

Lessons, where appropriate, incorporate multiple perspectives to infuse cultural and global awareness. (Scholastic Math articles on various cultures and global current events/historical events)

- Learning incorporates skills focusing on financial, economic, business, and entrepreneurial literacy. (Calculating tax, tip, simple interest, commission, discount, mark ups)
- Learning advocates for health literacy as a critical component of a healthy lifestyle and the ability to make good health-related decisions. (Scholastic Math article on Germs, Vaccinations, and Eye Exams)
- Students explore areas that support environmental literacy, including society's impact on the environment and what can be done to support environmental solutions. (Scholastic Math magazine article on the polar ice caps, moose tracking, Redwood Forest).

Lessons, activities, and assessments require creativity and innovation on the part of the students. They are required to create projects and products as examples of mastery in each unit. (CSI projects, student created board games, Geopark, Art in Math Percent project)

- Critical thinking and problem-solving skills are a core component of learning and assessment throughout this curriculum. Students are required, in each unit, to advance their learning through all levels of Bloom's Taxonomy to address the evaluation, synthesis, and creation of products using learning at the highest levels. Problem-solving is a recurring theme in the curriculum as students must seek ways to creatively apply the concepts to solve problems rather than simply remember the material. (Performance Tasks and Unit Exams)
- Communication and collaboration is crucial for student success as learners. Throughout this curriculum, students must be able to communicate deep understanding through open ended responses (both orally and in writing). In addition, students are often required to work collaboratively with their peers, which promotes the ability to succeed in the area of social cooperative work, increases communication skills, and promotes leadership and responsibility. (Group Projects, Station Work, Job Assignments within groups)
- Students must be information literate, i.e. they must be able to find and use information effectively, in order to succeed in class as learning activities require independent research of relevant information outside of the provided textbook and/or resources. (Collection of data and creation of charts and graphs, completing test corrections, analyzing test scores)
- Learning and assessment activities support the push to make students media literate, as they are often required to analyze, evaluate, and create messages in a wide variety of media modes, genres, and formats. (Creation of Jeopardy games by students, playing Jeopardy and other review games, Study Island, Front Row Ed)
- In order to succeed in this course, students must be able to use technology as a tool in order to research, organize, evaluate, and communicate information. (iPads, use of excel, Kahoot)
- Activities in the curriculum help develop life and career skills in all students by promoting flexibility and adaptability, requiring initiative and self-direction in the learning process, supporting social and cross-cultural skills in both content and teamwork efforts, and measuring productivity and accountability through independent and group assignment completion. (Choices in independent practice, APS, Student menu of activities for review, class presentations)

CPI #:

CUMULATIVE PROGRESS INDICATORS (CPI) from NJCCCS if applicable:

Content: What information do students need to know?

Vocabulary: population, inference, parameter vs. statistic, sample, random sample, convenience sample, systematic sample, voluntary response sample, uniform distribution, absolute deviation, central tendency, measures of variability, simulation

Statistics uses samples to gain information about a population.

· Collection of more than one sample is used to create a solid predication.

Measures of central tendency and variability are used to communicate data.

Box plots and quartile ranges (This should be a review for the 7th grade students)

Process: What will students be able to do with the information?

Understand that statistics can be used to gain information about a population by examining a sample of the population; generalizations about a population from a sample are valid only if the sample is representative of that population. Understand that random sampling tends to produce representative samples and support valid inferences.

Use data from a random sample to draw inferences about a population with an unknown characteristic of interest. Generate multiple samples (or simulated samples) of the same size to gauge the variation in estimates or predictions.

Informally assess the degree of visual overlap of two numerical data distributions with similar variability, measuring the difference between the centers by expressing it as a multiple of a measure of variability.

Use measures of center and measures of variability for numerical data from random samples to draw informal comparative inferences about two populations.

Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.

Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.

Develop a probability model and use it to find probabilities of events.

Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy.

Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.

Represent math concepts using visual and/or graphic modeling.

Present viable arguments and positions utilizing verbal, written, and hands-on expression.

Construct written responses that relate to real-world applications

Modifications:

Special Education	ESL	At-risk	Gifted and Talented
<p>Modifications and accommodations for students with IEPS are designed and documented in daily lesson plans</p> <p>7.SP.C.5 and 7.SP.C.6 Understand how the probability of an event indicates its likelihood.</p> <p>Probability chart, Vocabulary usage, one on one instruction, differentiated lessons, enrichment activities, manipulatives, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>7.SP.C.6; 7.SP.C.7a and 7.SP.C.7b Develop probability models using experimental and modeling, theoretical probability</p> <p>Vocabulary usage, on one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>	<p>Modifications and accommodations for ELL students are designed and documented in daily lesson plans</p> <p>Probability chart, Vocabulary usage, one on one instruction, differentiated lessons, enrichment activities, manipulatives, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, on one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>	<p>Interventions and strategies to support students at-risk for are designed and documented in daily lesson plans</p> <p>Probability chart, Vocabulary usage, one on one instruction, differentiated lessons, enrichment activities, manipulatives, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, on one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>	<p>Enrichment and acceleration opportunities for G&T students are designed and documented in daily lesson plans</p> <p>Probability chart, Vocabulary usage, one on one instruction, differentiated lessons, enrichment activities, manipulatives, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, on one one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>

<p>7.SP.C.8a and 7.SP.C.8b Find sample spaces and probabilities of compound events.</p> <p>Vocabulary usage, visual diagrams , differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, visual diagrams , differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, visual diagrams , differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, visual diagrams , differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>
<p>7.SP.C.8aand 7.SP.C.8c Design and use simulations to find probabilities of compound events.</p> <p>Clarify directions, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Clarify directions, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Clarify directions, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Clarify directions, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>
<p>7.SP.A.1 and 7.SP.A.2 Understand how to use random samples to make conclusions about a population.</p> <p>Vocabulary usage, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>

<p>7.SP.A.2 Understand variability in samples of a population.</p> <p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>
<p>7.SP.B.3 Compare populations using measures of center and variation.</p> <p>Vocabulary usage, visual diagrams, calculator, small group work, one on one instruction, differentiated instruction enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, visual diagrams, calculator, small group work, one on one instruction, differentiated instruction enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, visual diagrams, calculator, small group work, one on one instruction, differentiated instruction enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>	<p>Vocabulary usage, visual diagrams, calculator, small group work, one on one instruction, differentiated instruction enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a student's IEP or 504 plans</p>
<p>7.SP.A.2 7.SP.B.4 Use random samples to compare populations.</p> <p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/ modifications per a</p>	<p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/</p>	<p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/</p>	<p>Clarify directions , small group work differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/</p>

student's IEP or 504 plans	modifications per a student's IEP or 504 plans	modifications per a student's IEP or 504 plans	modifications per a student's IEP or 504 plans
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INSTRUCTION

CONTENT VOCABULARY:

complementary events, compound event, dependent event, experimental probability, fair, fundamental counting principle, independent events outcome, permutation, probability, random, relative frequency, sample space, simple event, simulation, theoretical probability, tree diagram, uniform probability model, unfair, biased sample, convenience sample, double box plot, double dot plot, population, sample, simple random sample, statistics, survey, systematic random sample, unbiased sample, voluntary response sample

ASSESSMENTS (BENCHMARK, FORMATIVE, SUMMATIVE, ALTERNATIVE):

Teachers can assign diagnostic measures (i.e. KWL, pre-test, do now, picture prompts) to assess student prior knowledge of statistics, data collection, center and measures of variability.

Group and individual work is assigned daily, from various sources (Synthesis, Analysis, and Evaluation).

Introductory and closing activities will be done every day to assess student knowledge and assess understanding of topics (Synthesis, Analysis, and Evaluation).

Teachers can choose among the Mathematical Reflections within the respective CMP2 book.

Students will be given quizzes that provide a brief review of the concepts and skills in the previous

Teacher made Performance Assessment Tasks (PATs))

Samples and Populations (CMP2))

Data Distributions (CMP2))

INSTRUCTIONAL RESOURCES (ELA – INCLUDE VARIOUS LEVELS OF TEXT):

Technology resources:

<http://www.state.nj.us/education/modelcurriculum/math/7u4.shtml>

<https://www.insidemathematics.org/performance-assessment-tasks>

<http://www.xpmath.com/>

<http://www.illustrativemathematics.org/>

<http://www.mathbitsnotebook.com/>

<http://map.mathshell.org/>

<https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8/file/133021>

<https://www.engageny.org/resource/grade-7-mathematics-module-5>

Engage NY - Grade 7:

Statistics and Probability

- Teacher materials
- Student materials
- Copy ready materials
- Module overview
- Assessments

UNIT OVERVIEW

CONTENT AREA: Mathematics	UNIT: Geometry
TARGET COURSE/GRADE LEVEL: Geometry / 7th	SUGGESTION TIMEFRAME: 34 days
TOPIC: Geometry	CHAPTERS COVERED:

UNIT SUMMARY/ UNIT RATIONALE:

This unit will allow students to solve for area and perimeter of different 2D geometrical shapes. They will calculate the area of rectangles, parallelograms, triangles, trapezoids, circles, irregular figures, and shaded figures. They will also explore special pairs of angles and the relationships they hold. This unit will introduce students to different properties of 3D figures. They will be able to compute the surface area of 3D figures, as well as their volume. The unit will also provide problems of how 3D figures are found in everyday life.

INTERDISCIPLINARY CONNECTIONS / PROBLEM-BASED LEARNING:

Career Education- As architects, investigate and describe various shapes in famous architectural work around the world and create your own architectural design/blueprint.

Health/PE- Design the seating for an Olympic stadium to give spectators the best view of events through the use of geometry and modeling.

English Language Arts & Literacy- Can two supplementary angles have the same measure? Explain. Provide examples.

Science- Estimate the volume of a beaker. Fill it with liquid and measure the exact volume. Identify any possible sources of error.

History/Social Studies- Use the scenario of the Gold Rush to have students calculate area to maximize profits.

Technical Subjects- A carpenter must know about angles and parallel lines in order to make correct measurements and cuts. A carpenter wants to make a hat rack. She knows that line parallel to line r , and angle m .

World Languages Above the door of the Greek philosopher, Plato, placed the following statement: "Let no one ignorant of geometry enter here." Write a journal entry as to why Plato may have felt passionate about the importance of the study of Geometry

Arts: While studying Art history, students will observe and analyze various artists and their masterpieces by measuring the angles at which lines are drawn and how those lines create movement and emotion within the art.

ESSENTIAL QUESTIONS:

How can I model this real world setting?

What relationship does the model have within different dimensions?

What types of problems are solved using three dimensional objects?

LEARNING TARGETS

NEW JERSEY STUDENT LEARNING STANDARDS

7.G.1 - Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

7.G.2 - Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.

7.G.3 - Describe the two-dimensional figures that result from slicing three-dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. 7.G.4 - Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle. 7.G.5 - Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure. 7.G.6 - Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms

21st Century Skills, 21ST CENTURY LIFE AND CAREER and TECHNOLOGY Standards:

Education: · Lessons, where appropriate, incorporate multiple perspectives to infuse cultural and global awareness. (Scholastic Math articles on various cultures and global current events/historical events)

· Learning incorporates skills focusing on financial, economic, business, and entrepreneurial literacy. (Calculating tax, tip, simple interest, commission, discount, mark ups)

· Learning advocates for health literacy as a critical component of a healthy lifestyle and the ability to make good healthrelated decisions. (Scholastic Math article on Germs, Vaccinations, and Eye Exams; Sports safety)

Students explore areas that support environmental literacy, including society's impact on the environment and what can be done to support environmental solutions. (Scholastic Math magazine article on the polar ice caps, moose tracking, Redwood Forest)

- Lessons, activities, and assessments require creativity and innovation on the part of the students. They are required to create projects and products as examples of mastery in each unit. (CSI projects, student created board games, Geo park, Art in Math Percent project)
- Critical thinking and problem solving skills are a core component of learning and assessment throughout this curriculum. Students are required, in each unit, to advance their learning through all levels of Bloom's Taxonomy to address the evaluation, synthesis, and creation of products using learning at the highest levels. Problem-solving is a recurring theme in the curriculum as students must seek ways to creatively apply the concepts to solve problems rather than simply remember the material. (Performance Tasks and Unit Exams)
- Communication and collaboration is crucial for student success as learners. Throughout this curriculum, students must be able to communicate deep understanding through open ended responses (both orally and in writing). In addition, students are often required to work collaboratively with their peers, which promotes the ability to succeed in the area of social cooperative work, increases communication skills, and promotes leadership and responsibility. (Group Projects, Station Work, Job Assignments within groups)
- Students must be information literate, i.e. they must be able to find and use information effectively, in order to succeed in class as learning activities require independent research of relevant information outside of the provided textbook and/resources. (Collection of data and creation of charts and graphs, completing test corrections, analyzing test scores)
- Learning and assessment activities support the push to make students media literate, as they are often required to analyze, evaluate, and create messages in a wide variety of media modes, genres, and formats. (Creation of Jeopardy games by students, playing Jeopardy and other review games, Study Island, Front Row Ed)
- In order to succeed in this course, students must be able to use technology as a tool in order to research, organize, evaluate, and communicate information. (iPads, use of excel, Kahoot)
- Activities in the curriculum help develop life and career skills in all students by promoting flexibility and adaptability, requiring initiative and self-direction in the learning process, supporting social and cross-cultural skills in both content and teamwork efforts, and measuring productivity and accountability through independent and group assignment completion. (Choices in independent practice, APS, Student menu of activities for review, class presentations)

CPI #:	CUMULATIVE PROGRESS INDICATORS (CPI) from NJCCCS if applicable:
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<p>Content: What information do students need to know?</p> <p>calculate the area of two dimensional shapes</p> <ul style="list-style-type: none"> • calculate the volume of the three-dimensional shapes • create nets from three-dimensional shape 	<p>Process: What will students be able to do with the information?</p> <p>Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.</p>
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Draw (freehand, with ruler and protractor, and with technology) geometric shapes with given conditions. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle

Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

Describe the two-dimensional figures that result from slicing three dimensional figures, as in plane sections of right rectangular prisms and right rectangular pyramids. 5.6

- Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

- Solve real-world and mathematical problems involving area, volume and surface area of two- and three dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms

Modifications:

Special Education	ESL	At-risk	Gifted and Talented
<p>Modifications and accommodations for students with IEPS are designed and documented in daily lesson plans</p> <p>7.G.B.4 Find the area and circumference of a circle.</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>7.G.B.4 and 7.G.B.6 Find perimeters and areas of composite figures.</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>7. G .A.2 Construct a polygon with given measures.</p> <p>Vocabulary usage, visual diagrams,</p>	<p>Modifications and accommodations for ELL students are designed and documented in daily lesson plans</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, visual diagrams,</p>	<p>Interventions and strategies to support students at-risk for are designed and documented in daily lesson plans</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, visual diagrams,</p>	<p>Enrichment and acceleration opportunities for G&T students are designed and documented in daily lesson plans</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Provide formulas, visual diagrams, vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, visual diagrams,</p>

<p>protractor, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>7.G.B.5 Use facts about angle relationships to find unknown angle measures.</p> <p>Vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>7.G.B.6 Find the surface area of prisms, cylinders and pyramids</p> <p>Calculator formula vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>7.G.A.3 Describe the cross-sections of three-dimensional figures.</p>	<p>protractor, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Calculator formula vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>	<p>protractor, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Calculator formula vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>	<p>vocabulary usage, protractor, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p> <p>Calculator formula vocabulary usage, clarify directions, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans</p>
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Vocabulary usage, visual diagrams, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans	Vocabulary usage, visual diagrams, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans	Vocabulary usage, visual diagrams, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans	Vocabulary usage, visual diagrams, one on one instruction, differentiated lessons, enrichment activities, manipulatives, modeling, and specific other accommodations/modifications per a student's IEP or 504 plans
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INSTRUCTION

CONTENT VOCABULARY:

acute angle, acute triangle, adjacent angles, base, complementary angles, cone, congruent, congruent segments, coplanar, cross section, cylinder, diagonal, edge, equilateral triangle, face, isosceles triangle, obtuse triangle, obtuse angle, plane, polyhedron, prism, pyramid, right angle, right triangle, scale, scale drawing, scale factor, scale model, scalene triangle, skew line, straight line, straight angles, supplementary angles, triangles, vertex, vertical angles, center, circle, circumference, composite figure, diameter, lateral face, lateral surface area, pi, radius, regular pyramid, semicircle, slant height, surface area, volume.

ASSESSMENTS (BENCHMARK, FORMATIVE, SUMMATIVE, ALTERNATIVE):

- **Daily Exit Quizzes**
- **End of Chapter Quizzes**
- **End of Unit Quizzes**
- **Cumulative Practice Test**

INSTRUCTIONAL RESOURCES (ELA - INCLUDE VARIOUS LEVELS OF TEXT):

7.G.2 7.G.5 Shapes and Designs – Investigation 1.1 Investigation 2, Investigation 4.1 *Supplementary, Complimentary, Vertical Adjacent (add'l resource needed)
 Power Practice: Geometry Grades 5-8 2004(Creating Teaching Press) by Pamela Jennett *pages 20-49
 7.G.4 7.G.6 Covering and Surrounding – Investigation 5 <http://illuminations.nctm.org/LessonDetail.aspx?id=L793> Fishing for the Best Prism <http://illuminations.nctm.org/LessonDetail.aspx?id=L763>

Planning a Playground 7.G.3

Video Reference – Donald Duck Math Magic Land 7.G.1

Stretching and Shrinking – Investigation 1, 2, 3, 4, 5

Technology resources:

- <http://www.nj.gov/education/modelcurriculum/math/7u5.shtml> User Name: model Password: curriculum
- <https://www.insidemathematics.org/performance-assessment-tasks>
- www.mathplayground.com
- www.teacherspayteachers.com
- www.kahnacademy.org
- www.xpmath.com
- www.illustrativemathematics.org
- www.mathbitsnotebook.com
- <http://map.mathshell.org/>
- <https://parcc.pearson.com/practice-tests/math/>
- <https://www.engageny.org/resource/mathematics-fluency-support-grades-6-8/file/133021>
Provides fluency exercises along with recommended use
- <https://www.engageny.org/resource/grade-7-mathematics-module-6>
Engage NY - Grade 7: Geometry
 - Teacher materials
 - Student materials
 - Copy ready materialsModule overview
 - Assessments