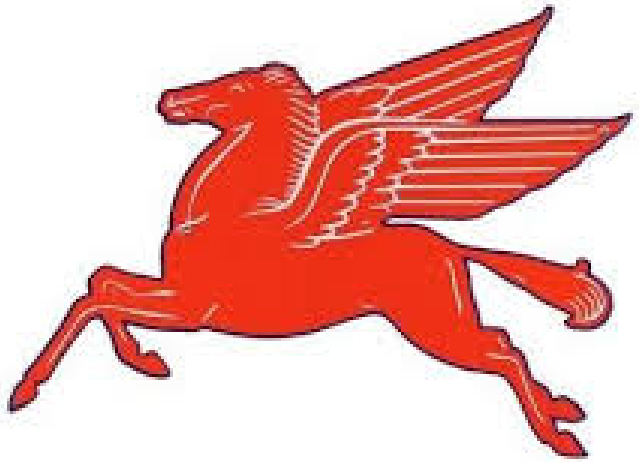
Curriculum Management System

PAULSBORO PUBLIC SCHOOLS



Mathematics – Grade 7

UPDATED 2020-2021

For adoption by all regular education programs as specified and for adoption or adaptation by all Special Education Programs in accordance with Board of Education Policy.

Board Approved: October 2021

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Paulsboro Public Schools

Mission Statement

The mission of the Paulsboro School District is to work with students, parents, educators, and community to develop excellence in education while preparing each student to be viable and productive citizens in society. Our goal is to develop the unique potential of the whole student by creating a challenging and diverse learning climate that prepares students for the 21st Century and is rich in tradition and pride.

Pacing Guide

TOPIC	# OF DAYS	DATES	COMMENTS
1 – Integers and Rational #'s	*45*	*Sept – Mid Nov.*	*Operations with Integers compared to operations with Rational Numbers*
2 – Analyze and Use Proportional Relationships	45	Mid Nov. – Jan.	Recognize and Represent Proportional Relationships in verbal descriptions, tables, equations and Graphs
3 – Analyze and Solve Percent Problems	45	Feb. – Mid April	Understanding that a percent is a ratio that represents part of a whole
4 – Generate Equivalent Expressions	45	Mid April - June	Analyzing equivalent Expressions

DEFINITIONS

NJ Student Learning Standards – Clear and specific benchmarks for students' achievement in various content areas. The standards ensure that each child receives a "thorough and efficient education".

21st Century Life and Careers Standards – These skills that are comprised of the "12 Career Ready Practices" and Standards 9.1 through 9.4. The organization of these standards intends to enable students to make informed decisions that prepare them to engage as active citizens in global society and be prepared for the opportunities of the 21st century workplace.

ELA Companion Standards – Consists of standards for reading and writing in History, Social Studies, Science and Technical subjects. ELA curricula

Gifted and Talented Learners – Students with high-ability who may need more depth and complexity in instruction.

Special Education Learners – Students in need of supports and interventions to improve student achievement

English Language Learners – Students with a native language other than English or who are at varying degrees of English language proficieny.

QUARTER 1 –
Big Idea I: Understand integers, absolute value, and rational numbers.
Topic: Integers and Rational Numbers

NJ Student Learning Standards:

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.

7.NS.1

a. Describe situations in which opposite quantities combine to make 0.

b. Understand $p + q$ as the number located a distance $|q|$ from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts.

c. Understand subtraction of rational numbers as adding the additive inverse, $p - q = p + (-q)$. Show that the distance between two rational numbers on the number line is the absolute value

GOAL

The students will be able to understand integers, absolute value, and rational numbers.

Essential Questions	Assessments
Essential Questions: • **How are integers and their opposites related?** • **How are rational numbers written as decimals?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**
Enduring Understanding	**Resources**

of their difference, and apply this principle in real-world contexts. **d.** Apply properties of operations as strategies to add and subtract rational numbers. 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.*	**Enduring Understanding:** **• There are many ways to represent a number.** **• Number sense develops through experience.** **• Operations create relationships between numbers.** **• The relationships among the operations and their properties promote computational fluency.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

Anchor Standards: ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: In example 3, what integer represents the change from the start to 3:00AM Students with Disabilities: In Example 2, what is the opposite of 3 and -18? How many spaces do you move from -4 to zero? English Language Learners: Complete Example 1 and answer: What is an integer? What numbers are integers? What numbers are positive integers?		

QUARTER 1 –
Big Idea II: Add, subtract, multiply, and divide integers and rational numbers.
Topic: Integers and Rational Numbers

Standards:

Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.
7.NS.1
d. Apply properties of operations as strategies to add and subtract rational numbers.

Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.
7.NS.2
a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (–1)(–1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.
b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non- zero divisor) is a rational number. If ***p*** and ***q*** are integers, then –(***p***/***q***) = (–***p***)/***q*** = ***p***/(–***q***). Interpret quotients of rational numbers

GOAL

Students will be able to add, subtract, multiply, and divide integers and rational numbers.

Essential Questions	Assessments
Essential Questions: • **How do you use what you know about absolute value to add integers?** • **How is subtracting integers related to adding integers?** • **How are adding and subtracting integers related to adding and subtracting other rational numbers?** • **How do the signs of factors affect their product?** • **How is multiplying rational numbers like multiplying integers?** • **How does dividing integers relate to multiplying integers?** • **How is dividing rational numbers like dividing integers?** • **How do you decide which rational number operations to use to solve problems?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

by describing real-world contexts. **c.** Apply properties of operations as strategies to multiply and divide rational numbers. Solve real-world and mathematical problems involving the four operations with rational numbers. **7.NS.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. 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.*		
	Enduring Understanding	Resources
	Enduring Understanding: **• There are many ways to represent a number.** **• Number sense develops through experience.** **• Operations create relationships between numbers.** **• The relationships among the operations and their properties promote computational fluency.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

TECH.8.1.12.E.CS2 *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: From Example 3: Determine the Unit Rate for each animal. Students with Disabilities: From Example 2: Find a ratio equal to 25/10.		

English Language Learners: In Example 1: What does the word Equivalent mean? Which pairs are equal ratios?		

QUARTER 1 –
Big Idea III: Write, simplify, expand, and factor linear expressions.
Topic: Generate Equivalent Expressions

Standards:

Use properties of operations to generate equivalent expressions.

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. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."*

GOAL

Students will learn to write, simplify, expand, and factor linear expressions.

Essential Questions	Assessments
Essential Questions: • **How can algebraic expressions be used to represent and solve problems?** • **What are equivalent expressions?** • **How are properties of operations used to simplify expressions?** • **How does the value of an expression change when it is expanded?** • **How does the Distributive Property relate to factoring expressions?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

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. 1. ***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. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?*** 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:**		
	Enduring Understanding	Resources
	Enduring Understanding: • **Real world situations can be represented symbolically and graphically.** • **Algebraic expressions and equations generalize relationships from specific cases.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

TECH.8.1.12.B.CS1 *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: In example 3: How can you solve for x, since it is in the denominator? Students with Disabilities: In example 2 How do you write a percent as a decimal? What is 150% as a decimal?		

English Language Learners: In Example 1: Which number represents the time left with the battery at 100%. .		

QUARTER 1 –
Big Idea IV: Add and subtract linear expressions and analyze equivalent expressions.
Topic: Generate Equivalent Expressions

Standards:	**GOAL**	
Use properties of operations to generate equivalent expressions. **7.EE.1** Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.	Students will learn to add and subtract linear expressions and analyze equivalent expressions.	
	Essential Questions	**Assessments**
	Essential Questions: • **How can properties of operations be used to add expressions?** • **How can properties of operations be used to subtract expressions?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz**

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. *For example, a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."* 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions*	• **How can writing equivalent expressions show how quantities** • **are related?**	• **Topic Assessment** • **Topic Performance Assessment**
	Enduring Understanding	Resources
	Enduring Understanding: **• Real world situations can be represented symbolically and graphically.** **• Algebraic expressions and equations generalize relationships from specific cases.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

LA.RH.6-8.7 *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: In example 3: How much money did Ravi have left over? Students with Disabilities: In example 2: In the expression 6x -10, what are the constant and the coefficient? English Language Learners: In example 1: Identify each part of 3x – 10.		

QUARTER 2 –

Big Idea I: Write and solve two-step equations and solve equations using the distributive property.

Topic: Solve Problems Using Equations and Inequalities

Standards:	GOAL	
	Students will learn to write and solve two-step equations and solve equations using distributive property.	
	Essential Questions	**Assessments**
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. **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	**Essential Questions:** • **How does an equation show the relationship between variables and other quantities in a situation?** • **How is solving a two-step equation similar to solving a one-step equation?** • **How does the Distributive Property help you solve equations?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

strategies. ***For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.***		
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. 1. ***a. 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. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?***	**Enduring Understanding**	**Resources**
	Enduring Understanding: **• Real world situations can be represented symbolically and graphically.** **• Algebraic expressions and equations generalize relationships from specific cases.** **• A problem solver understands what has been done, knows why the process was appropriate, and can support it with reasons and evidence.** **• There can be different strategies to solve a problem, but some are more effective and efficient than others are.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**
21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason.		

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.*		

MODIFICATIONS: **Advanced Learner**: In example 3: Give an example of equivalent equations. **Students with Disabilities**: In example 2: Why is an equation needed for this problem? **English Language Learners**: In example 3: What is an ounce? What is a coupon code?		

QUARTER 2 –
Big Idea II: Write, solve, and graph inequalities involving one-step, two-steps, and multi-steps.
Topic: Solve Problems Using Equations and Inequalities

Standards:	GOAL	
Solve real-life and mathematical problems using numerical and algebraic expressions and equations. **7.EE.3** Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers,	Students will learn to write, solve, and graph inequalities involving one-step, two steps, and multi-steps.	
	Essential Questions	**Assessments**
	Essential Questions: • **How is solving inequalities with addition and subtraction similar to and different from solving**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment**

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. ***For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*** **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. ***a.*** ***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. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width?***	**equations with addition and subtraction?** • **How is solving inequalities with multiplication and division similar to and different from soling equations with multiplication and division?** • **How is solving a two-step inequality similar to and different from solving a two-step equation?** • **How is solving a multi-step inequality similar to and different from solving a multi-step equation?**	• **Topic Performance Assessment**
	Enduring Understanding	Resources
	Enduring Understanding: **• Real world situations can be represented symbolically and graphically.** **• Algebraic expressions and equations generalize relationships from specific cases.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook**

1. ***b. 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. For example: As a salesperson, you are paid $50 per week plus $3 per sale. This week you want your pay to be at least $100. Write an inequality for the number of sales you need to make, and describe the solutions*** 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:**	**• A problem solver understands what has been done, knows why the process was appropriate, and can support it with reasons and evidence.** **• There can be different strategies to solve a problem, but some are more effective and efficient than others are.**	**Khanacademy.com**

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QUARTER 2 –
Big Idea III: Connect ratios, rates, and unit rates.
Topic: Analyze and Use Proportional Relationships

Standards:

Analyze proportional relationships and use them to solve real-world and mathematical problems.

7.RP.1
Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. *For example, if a person walks 1/2 mile in each 1/4 hour, compute the unit rate as the complex fraction 1/2/1/4 miles per hour, equivalently 2 miles per hour.*

7.RP.3
Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

21st College and Career Readiness:

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

GOAL

Essential Questions

Essential Questions:

- **How are ratios, rates, and unit rates used to solve problems?**
- **Why is it useful to write a ratio of fractions as a unit rate?**

Assessments

Assessments:

- **Mid-Topic Checkpoint**
- **Mid-Topic performance Task**
- **Lesson Quiz**
- **Topic Assessment**
- **Topic Performance Assessment**

Enduring Understanding

Enduring Understanding:

- **Proportional relationships express how quantities change in relationship to each other.**
- **Measurement describes the attributes of objects and events.**

Resources

Resources:

EnVision Math 2.0 workbook

https://www.savvasrealize.com

Additional practice workbook

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.*	**• Standard units of measure enable people to interpret results or data.**	**Khanacademy.com**

MODIFICATIONS: **Advanced Learner**: Example 2: What other measurements for a square could you use. **Students with Disabilities**: Example 1: Have students rewrite the expression with no decimals. **English Language Learners:** Example 3: Which ratios are equivalent and which are not?		

QUARTER 2 –
Big Idea IV: Understand, describe, and graph proportional relationships.
Topic: Analyze and Use Proportional Relationships

Standards:	GOAL	
	Essential Questions	Assessments
Analyze proportional relationships and use them to solve real-world and mathematical problems. **7.RP.2** Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a	**Essential Questions:** • **How are proportional quantities described by equivalent ratios?** • **How can you represent a proportional relationship with an equation?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

coordinate plane and observing whether the graph is a straight line through the origin. b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn.* d. Explain what a point *(x, y)* on the graph of a proportional relationship means in terms of the situation, with special attention to the points (0, 0) and (1, *r)* where *r* is the unit rate. **7.RP.3** Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.* 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them.	• **What does the graph of a proportional relationship look like?** • **How can proportional reasoning help solve a problem?**	
	Enduring Understanding	**Resources**
	Enduring Understanding: **• Proportional relationships express how quantities change in relationship to each other.** **• Measurement describes the attributes of objects and events.** **• Standard units of measure enable people to interpret results or data.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

CRP11. Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* **MODIFICATIONS:** **Advanced Learner**: Example 3: What should Bryan have been charged for 12 months.		

Students with Disabilities: Example 1: Have students compare and contrast the ratios given. **English Language Learners**: Example 2: What operations can you use to find your age in 5 years? .		

QUARTER 3–

Big Idea I: Analyze percents, connect percents to proportions, and use the percent equation.

Topic: Analyze and Solve Percent Problems

Standards:

Analyze proportional relationships and use them to solve real-world and mathematical problems.

7.RP.2
Recognize and represent proportional relationships between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.

GOAL

Students will learn to analyze percents, connect percents to proportions, and use the percent equation.

Essential Questions	Assessments
Essential Questions: • **How do percents show the relationship between quantities?** • **How does proportional reasoning relate to percent?** • **How are percent problems related to proportional reasoning?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. c. Represent proportional relationships by equations. *For example, if total cost t is proportional to the number n of items purchased at a constant price p, the relationship between the total cost and the number of items can be expressed as t = pn*. 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an*		
	Enduring Understanding	Resources
	Enduring Understanding: **• Proportional relationships express how quantities change in relationship to each other.** **• In certain situations, an estimate is as useful as an exact answer.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

accurate summary of the source distinct from prior knowledge or opinions ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: Example 3: Have students compare answers to their peers. Are the answers similar or different? Students with Disabilities: Example 1: What number can the numerator and denominator be multiplied by to create an equivalent fraction? English Language Learners: Define percent, proportion and solution. .		

QUARTER 3 –

Big Idea II: Solve percent change, percent error, markup, markdown, and simple interest problems.

Topic: Analyze and Solve Percent Problems

Standards:

Analyze proportional relationships and use them to solve real-world and mathematical problems.

7.RP.3

Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error.*

21st College and Career Readiness:

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

GOAL

Students will learn to solve percent change, percent error, markup, markdown, and simple interest problems.

Essential Questions	Assessments
Essential Questions: • **How is finding percent error similar to finding percent change?** • **How are the concepts of percent markup and percent markdown related to the percent equation?** • **How does simple interest show proportional reasoning and relate to the percent equation?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**
Enduring Understanding	**Resources**

Technology Standards: ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: In example 1: Write an equation to represent the solution.	**Enduring Understanding:** **• Proportional relationships express how quantities change in relationship to each other.** **• In certain situations, an estimate is as useful as an exact answer.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

Students with Disabilities: In example 1: What percent of 80 is 40? What percent of 38 is 11.4? **English Language Learners:** Have students identify the vocab words in their native language and compare the understanding to English definitions. .		

QUARTER 3 –
Big Idea III: Analyze and draw inferences about biased and unbiased samples.
Topic: Use Sampling to Draw Inferences about Populations

Standards:	**GOAL**	
	Students will learn to analyze and draw inferences about biased and unbiased samples.	
	Essential Questions	**Assessments**
Analyze proportional relationships and use them to solve real-world and mathematical problems. **7.RP.3** Use proportional relationships to solve multistep ratio and percent problems. *Examples: simple interest, tax, markups*	**Essential Questions:** • **How can you determine a representative sample of a population?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment**

and markdowns, gratuities and commissions, fees, percent increase and decrease, percent error. Use random sampling to draw inferences about a population. **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. *For example, estimate the mean word length in a book by randomly sampling words from the book; predict the winner of a school election based on randomly sampled survey data. Gauge how far off the estimate or prediction might be.*	• **How can inferences be drawn about a population from data gathered from samples?** • **How can data displays be used to compare populations?**	• **Topic Performance Assessment**
	Enduring Understanding	Resources
	Enduring Understanding: **• Patterns and relationships can be represented numerically, graphically, symbolically, and verbally.** **• Patterns provide insights into potential relationships.** **• The way that data is collected, organized and displayed influences interpretation.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

Solve real-life and mathematical problems using numerical and algebraic expressions and equations. **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. ***For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*** 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills.		

CRP4. Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.*		

LA.K-12.NJSLSA.R7 *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* **MODIFICATIONS:** **Advanced Learner**: In example 1: Find the alligators size next year. **Students with Disabilities**: Complete Example 1 **English Language Learners**: Example 3: Complete and write an equation to represent your answer.		

QUARTER 3 –
Big Idea IV: Compare populations using data displays and statistical measures.
Topic: Use Sampling to Draw Inferences about Populations

Standards:	GOAL	
	Students will learn to compare populations using data displays and statistical measures.	
Use random sampling to draw inferences about a population. **7.SP.3**	**Essential Questions**	**Assessments**
	Essential Questions:	**Assessments:**

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. *For example, the mean height of players on the basketball team is 10 cm greater than the mean height of players on the soccer team, about twice the variability (mean absolute deviation) on either team; on a dot plot, the separation between the two distributions of heights is noticeable.* **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. *For example, decide whether the words in a chapter of a seventh-grade science book are generally longer than the words in a chapter of a fourth-grade science book.* 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity.	• **How can dot plots and statistical measures be used to compare populations?** Enduring Understanding **Enduring Understanding:** **• Patterns and relationships can be represented numerically, graphically, symbolically, and verbally.** **• Patterns provide insights into potential relationships.** **• The way that data is collected, organized and displayed influences interpretation.**	• **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment** Resources **Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

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Students with Disabilities: Write a rule to convert a decimal to a percent. **English Language Learners**: Example 1: Explain what a markup is. .		

QUARTER 4 –
Big Idea I: Understand and find probability of simple events and represent sample spaces.
Topic: Probability

Standards:	GOAL	
	Students will learn to understand and find probability of simple events and represent sample spaces.	
	Essential Questions	**Assessments**
Investigate chance processes and develop, use, and evaluate probability models. **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. *For example, when rolling a*	**Essential Questions:** • **What is probability?** • **How can the probability of an event help make predictions?** • **How is experimental probability similar to and different from theoretical probability?** • **How can a model be used to find the probability of an event?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

number cube 600 times, predict that a 3 or 6 would be rolled roughly 200 times, but probably not exactly 200 times. **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. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events. *For example, if a student is selected at random from a class, find the probability that Jane will be selected and the probability that a girl will be selected.* b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process. *For example, find the approximate probability that a spinning penny will land heads up or that a tossed paper cup will land open-end down. Do the outcomes for the spinning penny appear to be equally likely based on the observed frequencies?* Solve real-life and mathematical problems using numerical and algebraic expressions and equations. **7.EE.3**		
	Enduring Understanding	Resources
	Enduring Understanding: **• The way that data is collected, organized and displayed influences interpretation.** **• The probability of an event's occurrence can be predicted with varying degrees of confidence.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

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. ***For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*** **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. 1. ***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. For example, the perimeter of a rectangle is 54 cm. Its length is 6 cm. What is its width? 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.*		

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QUARTER 4 –
Big Idea II: Determine outcomes, find probabilities, simulate compound events.
Topic: Probability

Standards:

7.SP.8
Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
a. 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.
b. 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.
c. Design and use a simulation to generate frequencies for compound events. *For example, use random digits as a simulation tool to approximate the answer to the question: If 40% of donors have type A blood, what is the probability that it will take at least 4 donors to find one with type A blood?*

7.EE.3
Solve multi-step real-life and mathematical problems posed with positive and negative

GOAL

Students will learn to determine outcomes, find probabilities, simulate compound events.

Essential Questions	Assessments
Essential Questions: • **How can all the possible outcomes, or sample space, of a compound event be represented?** • **How can a model help find the probability of a compound event?** • **How can you use simulations to determine the probability of events?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**
Enduring Understanding	**Resources**
Enduring Understanding:	**Resources:**

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. ***For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*** 21st College and Career Readiness: **CRP2.** Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.*	**• The way that data is collected, organized and displayed influences interpretation.** **• The probability of an event's occurrence can be predicted with varying degrees of confidence.**	**EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

TECH.8.1.12.E.CS2 *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* MODIFICATIONS: Advanced Learner: Example 1: What is one way to reduce the number of winners? Students with Disabilities: Example 1: Define Event, Probable Outcome and Theoretical outcome.		

English Language Learners: Example 1: What does the outcome mean?		

QUARTER 4 –
Big Idea III: Draw geometric figures and solve problems involving scale drawings, angle relationships, and circumference of a circle.
Topic: Solve Problems Involving Geometry

Standards:	GOAL	
Draw, construct, and describe geometrical figures and describe the relationships between them.	Students will learn to draw geometric figures and solve problems involving scale drawings, angle relationships, and circumference of a circle.	
	Essential Questions	Assessments
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.5** Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step	**Essential Questions:** • **How do scale drawings and actual measurements represent proportional relationships?** • **How can a shape that meets given conditions be drawn?** • **How can you determine when it is possible to draw a triangle given certain conditions?** • **How are angles formed by intersecting lines related?** • **How is the circumference of a circle related to the length of the diameter?**	**Assessments:** • **Mid-Topic Checkpoint** • **Mid-Topic performance Task** • **Lesson Quiz** • **Topic Assessment** • **Topic Performance Assessment**

problem to write and solve simple equations for an unknown angle in a figure.

21st College and Career Readiness:

CRP2. Apply appropriate academic and technical skills.

CRP4. Communicate clearly and effectively and with reason.

CRP8. Utilize critical thinking to make sense of problems and persevere in solving them.

CRP11. Use technology to enhance productivity.

Technology Standards:

TECH.8.1.12.B.CS1 *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.*
TECH.8.1.12.E.CS2 *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media*
TECH.8.2.12.D.CS1 *- [Content Statement] - Apply the design process.*

ELA Companion Standards:

LA.RH.6-8.2 *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions*
LA.RH.6-8.7 *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.*
LA.WHST.6-8.1.D *- Establish and maintain a formal/academic style, approach, and form.*

Anchor Standards:

LA.K-12.NJSLSA.R1 *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical*

Enduring Understanding	Resources
Enduring Understanding: **• Geometry and spatial sense offer ways to interpret and reflect on our physical environment.** **• Analyzing geometric relationships develops reasoning and justification skills.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text. ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone.* ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* **MODIFICATIONS:** **Advanced Learner**: Example 3: What is the probability of choosing a diamond? **Students with Disabilities**: Example 1: Express 22/200 as a decimal and a percent. **English Language Learners**: Define ratio, same, and equally likely. .		

QUARTER 4 –

Big Idea IV: Solve problems involving area of a circle, surface area, and volume. Describe cross sections.

Topic: Solve Problems Involving Geometry

Standards:

Draw, construct, and describe geometrical figures and describe the relationships between them.

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

GOAL

Students will learn to solve problems involving area of a circle, surface area, and volume.

Essential Questions

Essential Questions:

- **How can the area formula for a circle be used to solve problems?**
- **How do the faces of a three-dimensional figure determine the two-dimensional shapes created by slicing the figure?**
- **How is finding the area of composite two-dimensional figures similar to finding the surface area of three-dimensional figures?**
- **How does the formula for volume of a prism help you understand what volume of a prism means?**

Assessments

Assessments:

- **Mid-Topic Checkpoint**
- **Mid-Topic performance Task**
- **Lesson Quiz**
- **Topic Assessment**
- **Topic Performance Assessment**

informal derivation of the relationship between the circumference and area of a circle. **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. **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. ***For example: If a woman making $25 an hour gets a 10% raise, she will make an additional 1/10 of her salary an hour, or $2.50, for a new salary of $27.50. If you want to place a towel bar 9 3/4 inches long in the center of a door that is 27 1/2 inches wide, you will need to place the bar about 9 inches from each edge; this estimate can be used as a check on the exact computation.*** 21st College and Career Readiness:	Enduring Understanding	Resources
	Enduring Understanding: **• Geometry and spatial sense offer ways to interpret and reflect on our physical environment.** **• Analyzing geometric relationships develops reasoning and justification skills.**	**Resources:** **EnVision Math 2.0 workbook** **https://www.savvasrealize.com** **Additional practice workbook** **Khanacademy.com**

CRP2. Apply appropriate academic and technical skills. **CRP4.** Communicate clearly and effectively and with reason. **CRP8.** Utilize critical thinking to make sense of problems and persevere in solving them. **CRP11.** Use technology to enhance productivity. **Technology Standards:** ***TECH.8.1.12.B.CS1*** *- [Content Statement] - Apply existing knowledge to generate new ideas, products, or processes.* ***TECH.8.1.12.E.CS2*** *- [Content Statement] - Locate, organize, analyze, evaluate, synthesize, and ethically use information from a variety of sources and media* ***TECH.8.2.12.D.CS1*** *- [Content Statement] - Apply the design process.* **ELA Companion Standards:** ***LA.RH.6-8.2*** *- [Progress Indicator] - Determine the central ideas or information of a primary or secondary source; provide an accurate summary of the source distinct from prior knowledge or opinions* ***LA.RH.6-8.7*** *- [Progress Indicator] - Integrate visual information (e.g., in charts, graphs, photographs, videos, or maps) with other information in print and digital texts.* ***LA.WHST.6-8.1.D*** *- Establish and maintain a formal/academic style, approach, and form.* **Anchor Standards:** ***LA.K-12.NJSLSA.R1*** *- [Anchor Standard] - Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.* ***LA.K-12.NJSLSA.R4*** *- [Anchor Standard] - Interpret words and phrases as they are used in a text, including determining*		

technical, connotative, and figurative meanings, and analyze how specific word choices shape meaning or tone. ***LA.K-12.NJSLSA.R7*** *- [Anchor Standard] - Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words.* **MODIFICATIONS:** **Advanced Learner**: Example 2 : Why is the probability of 1-6 different than 6-1? **Students with Disabilities**: Example one: Why is the chance of BBG different that GBB? **English Language Learners**: Define table and Compound. .		

Grade 7

COURSE BENCHMARKS

At the end of grade 7 students will be able to:

1.Apply and extend previous understandings of operations with fractions.

2.Analyze proportional relationships and use them to solve real-world and mathematical problems.

3.Use properties of operations to generate equivalent expressions.

4.Solve real-world and mathematical problems using numerical and algebraic expressions and equations.

5.Use random sampling to draw inferences about a population.

6.Draw informal comparative inferences about two populations.

7.Investigate change processes and develop, use, and evaluate probability models.

8.Draw, construct, and describe geometrical figures and describe the relationships between them.

9.Solve real-world and mathematical problems involving angle measures, area, surface area, and volume.