NJDOE MODEL CURRICULUM PROJECT

CONTENT AREA: Mathematics	GRADE: 7	UNIT #: 2	UNIT NAME: Expressions and Equations

STUDENT LEARNING OBJECTIVES		CORRESPONDING CCSS	
1	Apply the properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients (including additive and multiplicative inverse, distributive, commutative, and associative properties).	7.EE.1	Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.
2	Use equivalent expressions to demonstrate the relationship between quantities and determine simpler solutions to a problem, such as a + 0.05a = 1.05a means that "increase by 5%" is the same as "multiply by 1.05."	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."*
3	Solve multi-step real life and mathematical problems with rational numbers in any form (fractions, decimals, percents) by applying properties of operations and converting rational numbers between forms as needed, and then assess the reasonableness of results using mental computation and estimation strategies.	**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.
4	Use variables to represent quantities in a real-world or mathematical problem by constructing simple equations and inequalities to represent problems. *Equations of the form px + q = r and p(x + q) = r and inequalities of the form px + q > r or px + q < r, where p, q, and r are specific rational numbers.*	**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,

STUDENT LEARNING OBJECTIVES		CORRESPONDING CCSS	
5	Fluently solve equations and inequalities and graph the solution set of the inequality; interpret the solutions in the context of the problem.		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? 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.

Major Content **Supporting Content** **Additional Content** (Identified by PARCC Model Content Frameworks). ***Bold type indicates grade level fluency requirements.*** *(Identified by PARCC Model Content Frameworks).*

Selected Opportunities for Connection to Mathematical Practices

1. **Make sense of problems and persevere in solving them.**
   SLO 4 Compare arithmetic and algebraic solutions to the same real-world problems.
2. **Reason abstractly and quantitatively.**
   SLO 2 Find simpler but equivalent expressions
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics.
5. Use appropriate tools strategically.
6. Attend to precision.
7. **Look for and make use of structure.**
   SLO 1 Examine the formation of rational expressions then perform appropriate arithmetic operations.
8. Look for and express regularity in repeated reasoning.

All of the content presented at this grade level has connections to the standards for mathematical practices.

Bold type identifies possible starting points for connections to the SLOs in this unit.

Greater Brunswick Charter School Curriculum

Grade level: 7				Subject: Math			Unit #: 2
Day	**Topic**	**SLO**	**Learning Objectives**	**Essential Questions**	**Suggested Student Activities**		**Possible Resources**
					Whole Group	**Small Group / Stations**	
1	Algebraic expressions	1	To evaluate algebraic expressions	*How can I represent quantities if the quantities change?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.348-355
2	Sequences	1	To complete sequences	*How can I predict the future when I know the past?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.357-363
3	Sequences	1	To model sequences	*How can sequences help me predict real life?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.365-366
4	Operations on expressions	1	To recognize operation properties	*How can the properties I've known help me work with expressions?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.367-373
5	Distributive Property	1	To evaluate expressions with common factors	*How well do I remember the distributive property?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.375-381
6	Sequences	1	To use sequences to predict real life situations	*How can sequences help me predict real life?*		• Differentiated intervention • Review practice • Independent Practice • i-Ready	GlencoeMath p.383-386
7	Expressions and sequences					• Review • Assessment	
8	Simplifying expressions	1, 2	To recognize terms, like terms, coefficients	*What are the differences between terms in an expression?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.387-393

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9	Adding like terms	1, 2	To use distributive and adding properties to combine like terms and simplify an expression	*How can I use operation properties to make expressions simpler?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.395-401
10	Distributing a negative sign	1, 2	To distribute a negative factor through an associated pair of terms			• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.403-409
11	Common factors	1, 2	To identify the common factor of two terms	*How is finding a common factor of two terms a lot like finding the common factor of a numerator and denominator?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.411-414
12	Factoring linear expressions	1, 2				• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.415-421
13	Working with expressions	1, 2	To identify areas of weakness to improve skills	*What do I know and don't know from the past 12 days?*	*Assign students elements of the pages based on their skills, work with students who are struggling with skills.*	• Differentiated intervention • Review practice • Independent Practice • i-Ready	GlencoeMath p.423-428
14	Working with expressions	1, 2				• Review • Assessment	GlencoeMath p.
15	One-step addition and subtraction problems with one variable	1, 2, 4	To create one-step equations to represent real world situations	*How can I make an equation that describes a real situation?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.431-436
16	Solving one-step equations	1, 2, 3, 5	To simplify and solve one-step algebraic equations	*How can I use the operations properties to solve for a variable?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.437-443

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17	One-step multiplication and division problems with one variable	1, 2, 4	To create one-step equations to represent real world situations	*How can I make an equation that describes a real situation?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.445-446
18	Solving one-step equations	1, 2, 3, 5	To simplify and solve one-step algebraic equations	*How can I use the operations properties to solve for a variable?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.447-453
19	Creating equations form real world situations	1, 2, 3, 4, 5	To create and solve one-step equations to represent real world situations	*How can I make an equation that describes a real situation?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.455-456
20	Solving equations with decimal and fractional coefficients	1, 2, 3, 5	To solve equations with complex coefficients	*How are problems with decimals and fractions for coefficients just like the equations with whole numbers?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.457-463
21	Solving two-step equations	1, 2, 3, 5	To solve equations requiring two steps to simplify	*How are two-step problems exactly like one-step problems just with two steps instead of one?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.465-475
22			To solve two-step problems with rational coefficients	*How do decimals and fractions for coefficients work just like whole numbers?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.477-487
23	Solving equations	1, 2, 3, 4, 5	To identify areas of weakness to improve skills	*What do I know and don't know from the past 10 days?*	*Assign students elements of the pages based on their skills, work with students who are struggling with skills.*	• Differentiated intervention • Review practice • Independent Practice • i-Ready	GlencoeMath p.489-496
24	Solving equations	1, 2, 3, 4, 5				• Review • Assessment	

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25	Solve inequalities with addition or subtraction	1, 2, 3, 4, 5	To solve inequalities using addition or subtraction	*How can I combine terms to simplify expressions and find the value?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.497-501
26						• Differentiated intervention • Review practice • Independent Practice • i-Ready	GlencoeMath p.502-503
27	Solve inequalities with multiplication or division	1, 2, 3, 4, 5	To solve inequalities using multiplication or division	*How can I use factor to simplify expressions and find the value?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.505-509
28						• Differentiated intervention • Review practice • Independent Practice • i-Ready	GlencoeMath p.510-511
29	Solve two-step inequalities	1, 2, 3, 4, 5	To solve inequalities requiring two-steps to complete	*How are two-step inequalities exactly like one-step inequalities just with two steps instead of one?*		• Lesson • Guided Practice • Independent Practice • i-Ready	GlencoeMath p.513-518
30						• Differentiated intervention • Review practice • Independent Practice • i-Ready	GlencoeMath p.518-519
31	Solve equations and inequalities	1, 2, 3, 4, 5	To identify areas of weakness to improve skills			• Differentiated intervention • Review practice • Independent Practice • i-Ready	
32	Solve equations and inequalities					• Review • Assessment	

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Word Wall Candidates

Additive Identity Property	Multiplicative Identity Property	Coefficient	Constant	Counterexample
Factor	Like terms	Linear expression	Monomial	Term
Variable	Equation			

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Authentic Application

Your Goal: To determine the better price of three cell phone carriers at different times in the contract.

Your Role: To research the pricing plans for each carrier and represent the best deal for customers

Your Audience: Potential customers

The Situation: You will pick three carriers and do some exploring on their website. You will try to find information to come up with three equations, one from each carrier you choose, of the cost of the same product.
Three Aspects of the Assignment:

1. Write three equations reflecting the cost
2. Graph the equations on the same graph to show comparison

Your Product: Make a project board to show which company was the cheapest

Success Criteria:

CATEGORY	4	3	2	1
Research	Student found all the information they needed for the equations and the project board.	Student did research but did not do enough for either the equations or the project board.	Student did some research but numbers for the equation and information for project board was not accurate.	Student failed to research and completely altered the data.
Writing Linear Equations	Student accurately wrote two linear equations from the data they collected.	Student wrote the equations but was wrong on one aspect.	Student wrote the equations but they were wrong.	Student failed to write equations
Graphing Linear Equations	The student accurately graphed two linear equations.	The student graphed the equations but messed up on some aspect of graphing.	Student graphed one equation but not the other.	Student failed to graph either equation.
Project board	The project board was creative and had a numerous amount of information.	The project board lacked creativeness.	The project board lacked an element required to be in project board.	Student failed to create a project board.
Oral Presentation	Student presented their information in a clear and concise manner that was enjoyable to watch.	Student presented their information in a fashion that was understandable to most people	Student presented their information but not in a clear manner	Student failed to give an oral presentation