

GRADE 7 UNIT 2 – EXPRESSIONS AND EQUATIONS

<p>Established Goals: Standards</p> <p>7.EE.1 Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.</p> <p>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.”</p> <p>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 $\frac{1}{10}$ of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar $9\frac{3}{4}$ inches long in the center of a door that is $27\frac{1}{2}$ 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</p> <p>7.EE.4 Use variables to represent</p>	Transfer	
	<p><i>Students will be able to:</i></p> <ul style="list-style-type: none"> 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). 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.” 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. Use variables to represent quantities in a real-world or mathematical problem by constructing simple equations and inequalities to represent problems. <p><i>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.</i></p> <ul style="list-style-type: none"> Fluently solve equations and inequalities and graph the solution set of the inequality; interpret the solutions in the context of the problem. 	
	Meaning	
	ENDURING UNDERSTANDING	ESSENTIAL QUESTIONS
	Variables are used to represent quantities in real-world or mathematical problems	<p>How can equations be used in real-world contexts?</p> <p>Why would negative numbers be used in equations?</p>
	Acquisition	
	KNOWLEDGE	SKILLS
	<i>Students will know how to...</i>	<i>Students will be skilled at...</i>

<p>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? 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.</p>	<p>Solve algebraic expressions, equations, and inequalities that contain integers, decimals, and fractions.</p>	<p>Applying their knowledge to solve real world situations involving adding, subtracting, multiplying, and dividing rational numbers in algebraic expressions, equations, and inequalities</p>
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Vocabulary	Instruction and Pacing	
Linear expression Factor Coefficient Increase Decrease Variable Equation Inequality Solution Inverse	Pretest	1 day
	expressions	1 week
	One step adding and subtracting equations	1 week
	One step multiplying and dividing equations	1 week
	Two step adding and subtracting equations	1 week
	Two step multiplying and dividing equations	1 week
Resources		
Prentice Hall Course 2 Mathematics Common Core Textbook, Study Island, Teacher created materials.		

Differentiation and Accommodations

Provide graphic organizers
 Provide additional examples and opportunities for additional problems for repetition
 Provide tutoring opportunities
 Provide retesting opportunities after remediation (up to teacher and district discretion)
 Teach for mastery not test
 Teaching concepts in different modalities
 Adjust pace and homework assignments

ELL Modifications

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21st Century Skills

Critical Thinking, Creative Thinking, Collaborating, Communicating, and Technology Literacy

Instructional Strategies

Fairfield Township School recognizes the importance of the varying methodologies that may be successfully employed by teachers within the classroom and, as a result, identifies a wide variety of possible instructional strategies that may be used effectively to support student achievement. These may include, but not be limited to, strategies that fall into categories identified by the Framework for Teaching by Charlotte Danielson:

- Communicating with students
- Using questioning and discussion techniques
- Engaging students in learning
- Using assessment in instruction
- Demonstrating Flexibility and Responsiveness

Interdisciplinary Connections

ELA, Science and Technology

Common Misconceptions

Multiplying 2 negatives to solve an equation makes a negative product.
 Multiplying proper fractions to solve an equation creates a larger product
 When multiplying decimals, they must line up the decimal.

Proper Conceptions

Multiplying 2 negatives make a positive.
 Multiplying proper fractions create smaller numbers.
 When multiplying decimals, they needn't line up the decimal.

Performance Task

Abigail has \$400 in her savings account. She wants to keep at least \$160 in the account. She withdraws \$40 each week for food.

Part 1) Write an inequality that you could use to find out how many weeks she can make withdraws from the account

Part 2) Solve the inequality, showing your work, and determine how many weeks she can make withdraws from the account

Part 3) Draw a number line and graph the inequality

Rubric: 1 point for each correct bullet

ASSESSMENTS

Suggested Formative Assessment

Problem of the Day

Exit Ticket

Suggested Summative Assessment

topic quizzes

homework

Grade level developed Unit Tests

Ed-Connect Express Tests /State Unit Benchmark Assessment/Performance Task

