

### Math 7 Unit 3 Overview: Equations

Unit Outcomes	Key Vocabulary
At the end of this unit, your student should be able to:	Terms to deepen the student's understanding
<ul style="list-style-type: none"> <li>✓ Understand what a variable represents</li> <li>✓ Solve and set-up one-, two-, and multi-step equations containing integers and rational numbers</li> <li>✓ Set up equations from word problems</li> </ul>	<ul style="list-style-type: none"> <li>✓ Addition Property of Opposites</li> <li>✓ Additive Identity Property of Zero</li> <li>✓ Additive Inverses</li> <li>✓ Constant</li> <li>✓ Distributive Property</li> <li>✓ Equation</li> <li>✓ Expression</li> <li>✓ Integers</li> <li>✓ Rational Numbers</li> <li>✓ Subtraction Property of Equality</li> </ul>
Key Standards Addressed	Where This Unit Fits
Connections to Common Core/NC Essential Standards	Connections to prior and future learning
<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. <i>For example, <math>a + 0.05a = 1.05a</math> means that "increase by 5%" is the same as "multiply by 1.05."</i></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. <i>For example: If a woman making \$25 an hour gets a 10% raise, she will make an additional <math>\frac{1}{10}</math> of her salary an hour, or \$2.50, for a new salary of \$27.50. If you want to place a towel bar <math>9\frac{3}{4}</math> inches long in the center of a door that is <math>27\frac{1}{2}</math> 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.</i></p> <p>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.</p>	<p><b>Coming into this unit, students should have a strong foundation in:</b></p> <ul style="list-style-type: none"> <li>✓ Prime factorization</li> <li>✓ Addition, subtraction, multiplication, and division of rational numbers</li> <li>✓ Writing algebraic expressions from verbal expressions</li> </ul> <p><b>This unit builds to the following future skills and concepts:</b></p> <ul style="list-style-type: none"> <li>✓ Writing linear equations</li> <li>✓ Solving literal equations</li> <li>✓ Solving systems of linear equations and inequalities</li> <li>✓ Working with formulas, specifically in the two- and three-dimensional geometry units</li> </ul>

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<p>7.EE.4a - Solve word problems leading to equations of the form <math>px + q = r</math> and <math>p(x + q) = r</math>, where <math>p</math>, <math>q</math>, and <math>r</math> 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?</p> <p>7.NS.1 - 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.</p> <p>7.NS.1a - Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</p> <p>7.NS.1d - Apply properties of operations as strategies to add and subtract rational numbers.</p>	
<b>Additional Resources</b> Materials to support understanding and enrichment	<b>“Learning Checks”</b> Questions Parents Can Use to Assess Understanding
<ul style="list-style-type: none"> <li>✓ <a href="#">Teaching videos made by Wake County teachers</a></li> <li>✓ <a href="#">WCPSS YouTube Channel – Math Playlist</a></li> <li>✓ <a href="#">Equation Balance</a></li> <li>✓ <a href="#">Equations with variables on both sides</a></li> <li>✓ <a href="#">Solving equations with distributive property</a></li> <li>✓ <a href="#">Equation balance 2</a></li> </ul>	<ul style="list-style-type: none"> <li>✓ What are some key terms in verbal expressions that indicate certain operations algebraically?</li> <li>✓ What are some examples of inverse operations?</li> <li>✓ When solving an equation, how can you ensure you keep both sides equal?</li> </ul>

\* **Please note**, the unit guides are a work in progress. If you have feedback or suggestions on improvement, please feel free to contact wakemiddle@wcpss.net.