WAKE COUNTY PUBLIC SCHOOL SYSTEM

Math 7 Unit 2 Overview: *Operations with Rational Numbers*

Unit Outcomes At the end of this unit, your student should be able to:	Key Vocabulary Terms to deepen the student's understanding
✓ Compare and order rational numbers ✓ Convert between fractions and decimals ✓ Add, subtract, multiply, and divide positive and negative rational numbers (decimals and fractions) ✓ Apply operations with rational numbers to real world problems	✓ Addend ✓ Additive Inverse ✓ Common Denominator ✓ Convert ✓ Denominator ✓ Difference ✓ Equivalent Fractions ✓ Fraction ✓ Improper Fraction ✓ Integer ✓ Least Common Denominator ✓ Mixed Number ✓ Multiplicative Inverses ✓ Numerator ✓ Proper Fraction ✓ Rational Number ✓ Repeating Decimal ✓ Sum ✓ Terminating Decimal
Key Standards Addressed Connections to Common Core/NC Essential Standards	**Where This Unit Fits** Connections to prior and future learning
7.EE.3 - Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically. Apply properties of operations to calculate with numbers in any form; convert between forms as appropriate; and assess the reasonableness of answers using mental computation and estimation strategies. 7.NS.1c - 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 of their difference, and apply this principle in real-world contexts. 7.NS.1d - Apply properties of operations as strategies to add and subtract rational numbers. 7.NS.2 - Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.	**Coming into this unit, students should have a strong foundation in:** ✓ Comparing and ordering positive rational numbers ✓ Adding, subtracting, multiplying, and dividing positive rational numbers ✓ Converting between positive fractions and positive decimals ✓ Apply all operations with positive rational numbers in real world problems **This unit builds to the following future skills and concepts:** ✓ Solving equations with rational numbers ✓ Solving inequalities with rational numbers ✓ Writing linear equations ✓ Solving linear systems of equations

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7.NS.2a - 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.

7.NS.2b -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 by describing real-world contexts.

7.NS.2c - Apply properties of operations as strategies to multiply and divide rational numbers.

7.NS.2d - Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.

7.NS.3 - Solve real-world and mathematical problems involving the four operations with rational numbers.

Additional Resources	**"Learning Checks"**
Materials to support understanding and enrichment	Questions Parents Can Use to Assess Understanding
✓ [Teaching videos made by Wake County teachers](#) ✓ [WCPSS YouTube Channel – Math Playlist](#) ✓ [Discovery education](#) – all Wake county students have an account and when signed in, they have access to a wide variety of resources ✓ [Adding and subtraction positive and negative fractions](#) ✓ [Multiplying positive and negative fractions](#) ✓ [Dividing positive and negative fractions](#) ✓ [Adding positive and negative decimals](#)	✓ How do you convert from a fraction to a decimal? ✓ How do you convert from a decimal to a fraction? ✓ What is the best way to compare and order fractions and decimals? ✓ How do you add, subtract, multiply and divide fractions? Decimals?