

## NJDOE MODEL CURRICULUM PROJECT

CONTENT AREA: Mathematics	GRADE: 7	UNIT #: 1	UNIT NAME: The Number System
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#	STUDENT LEARNING OBJECTIVES	CORRESPONDING CCSS
1	Describe and model, on a horizontal and vertical number line, real-world situations in which rational numbers are combined.	<b>7.NS.1</b>
2	Apply the additive inverse property to subtraction problems and develop the argument that the distance between two points is the absolute value of the difference between their coordinates.	<b>7.NS.1</b>
3	Explain why a divisor cannot be zero and why division of integers results in a rational number.	<b>7.NS.2</b>
4	Model the multiplication and division of signed numbers using real-world contexts, such as taking multiple steps backwards.	<b>7.NS.2</b>
5	Convert a rational number to a decimal using long division and explain in oral or written language why the decimal is either a terminating or repeating decimal.	<b>7.NS.2</b>
6	Apply properties of operations as strategies to add, subtract, multiply, and divide rational numbers.	<b>7.NS.2</b> <b>7.NS.3</b>
7	Solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of rational numbers.	<b>7.NS.3</b>

**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.
2. Reason abstractly and quantitatively.
- 3. Construct viable arguments and critique the reasoning of others.**

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SLO #3 Present oral and written arguments.

**4. Model with mathematics.**

SLOs #1 and #4 Apply the mathematics to describe situations that arise from their environments.

5. Use appropriate tools strategically.

6. Attend to precision.

**7. Look for and make use of structure.**

SLO #6 Discern a structure then perform calculations appropriate for the structure.

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.***

Code #	Common Core State Standards
<b>7.NS.1</b>	<p>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> <ol style="list-style-type: none"> <li>a. Describe situations in which opposite quantities combine to make 0. <i>For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.</i></li> <li>b. Understand <math>p + q</math> as the number located a distance <math> q </math> from <math>p</math>, in the positive or negative direction depending on whether <math>q</math> 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.</li> <li>c. Understand subtraction of rational numbers as adding the additive inverse, <math>p - q = p + (-q)</math>. 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.</li> <li>d. Apply properties of operations as strategies to add and subtract rational numbers</li> </ol>
<b>7.NS.2</b>	<p>Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers.</p> <ol style="list-style-type: none"> <li>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 <math>(-1)(-1) = 1</math></li> </ol>

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	<p>and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.</p> <p>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 <math>p</math> and <math>q</math> are integers, then <math>-(p/q) = (-p)/q = p/(-q)</math>. Interpret quotients of rational numbers by describing real-world contexts.</p> <p>c. Apply properties of operations as strategies to multiply and divide rational numbers.</p> <p>d. 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.</p>
<b>7.NS.3</b>	Solve real-world and mathematical problems involving the four operations with rational numbers.

**Major Content** **Supporting Content** **Additional Content** (Identified by PARCC Model Content Frameworks).

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