## NJDOE MODEL CURRICULUM PROJECT

**CONTENT AREA:** Mathematics  
**GRADE:** 7  
**UNIT #:** 1  
**UNIT NAME:** The Number System

### STUDENT LEARNING OBJECTIVES

<table>
<thead>
<tr>
<th>#</th>
<th>STUDENT LEARNING OBJECTIVES</th>
<th>CORRESPONDING CCSS</th>
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<tbody>
<tr>
<td>1</td>
<td>Describe and model, on a horizontal and vertical number line, real-world situations in which rational numbers are combined.</td>
<td>7.NS.1</td>
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<tr>
<td>2</td>
<td>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.</td>
<td>7.NS.1</td>
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<tr>
<td>3</td>
<td>Explain why a divisor cannot be zero and why division of integers results in a rational number.</td>
<td>7.NS.2</td>
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<tr>
<td>4</td>
<td>Model the multiplication and division of signed numbers using real-world contexts, such as taking multiple steps backwards.</td>
<td>7.NS.2</td>
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<tr>
<td>5</td>
<td>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.</td>
<td>7.NS.2</td>
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<tr>
<td>6</td>
<td>Apply properties of operations as strategies to add, subtract, multiply, and divide rational numbers.</td>
<td>7.NS.2</td>
</tr>
<tr>
<td>7</td>
<td>Solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of rational numbers.</td>
<td>7.NS.3</td>
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</table>

**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.*

<table>
<thead>
<tr>
<th>Code #</th>
<th>Common Core State Standards</th>
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| 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.  
   a. 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.*  
   b. Understand \( p + q \) as the number located a distance \(|q|\) from \( p \), in the positive or negative direction depending on whether \( q \) 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.  
   c. 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.  
   d. 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.  
   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 \((-1)(-1) = 1\) |
and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.

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 \( p \) and \( q \) are integers, then \( -(p/q) = (-p)/q = p/(-q) \). Interpret quotients of rational numbers by describing real-world contexts.

c. Apply properties of operations as strategies to multiply and divide rational numbers.

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.

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

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