

## NJDOE MODEL CURRICULUM PROJECT

**CONTENT AREA: Mathematics**

**GRADE: 7**

**UNIT #: 1**

**UNIT NAME: The Number System**

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

	and divide rational numbers.		
7	Solve mathematical and real-world problems involving addition, subtraction, multiplication, and division of rational numbers.		

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.**  
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.*

## Greater Brunswick Charter School Curriculum

Grade level: 7		Subject: Math			Unit #: 1		
Day	Topic	SLO CCSS	Learning Objectives	Essential Questions	Suggested Student Activities		Possible Resources
					Whole Group	Small Group / Stations	
1	Intro integers	1	Determine what is known and readiness for topic	<i>What do I already know about integers?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.187-190
2	Multiplying integers	4	Use models to multiply integers	<i>How do the signs work in multiplying integers?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.229-232
3			Multiply integers	<i>When I multiply integers, how do I treat the signs?</i>	<i>We begin with multiplication because it will help us subtract in a few days.</i>	<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.233-239
4	Properties of multiplication	2, 4	Demonstrate examples of Zero, Identity, Distributive, and Additive Inverse properties	<i>How do the properties of multiplication stay the same when using negative numbers?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.241-242
5	Dividing integers	4	Divide integers and expressions	<i>When I divide integers, how do I treat the signs?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.243-249
6	Absolute value	1	Find absolute value of an integer	<i>What is absolute about absolute value?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.191-197
7	Adding integers	1	Add integers using models	<i>How does picturing a number line in my mind help me figure out if the answer is</i>	<i>Practice with a vertical number line and count the differences before using any algorithm with the signs</i>	<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.199-202

Grade level: 7

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8		1	Add integers	<i>positive or negative?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.203-209
9	Subtracting integers	2	Subtract integers using models	<i>How does using multiplication properties to change the signs help me subtract integers?</i>	<i>Often, a number will be written as <math>-(-5)</math>. Allow the students to use multiplication rules to multiply the two negative signs together to make a positive.</i>	<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.211-214
10			Subtract integers	<i>How does picturing a number line in my mind help me figure out if the answer is positive or negative?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.215-221
11	Distance	2	Find the distance between two points on a number line	<i>How do the rules for subtraction and absolute value help me find a distance?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.223-224
12	Operations with integers	1, 2, 4				<ul style="list-style-type: none"> <li>• Review</li> <li>• Assessment</li> </ul>	
13	Operations with integers Rational numbers	1, 2, 4 3	Determine what is known and readiness for learning about rational numbers	<i>What do I already know about rational numbers?</i>		<ul style="list-style-type: none"> <li>• Review assessments</li> <li>• Intro rational numbers</li> </ul>	GlencoeMath p.257-260
14	Rational numbers and number lines	5	Place fractions on a number line	<i>How do fraction fit between whole numbers on a number line?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.261-262
15	Fractions as decimals	5	<ul style="list-style-type: none"> <li>• Place fractions on a number line</li> <li>• Change fraction to decimal</li> </ul>	<i>What causes a decimal to be repeating?</i>	<i>Focus them on it being done simply by dividing the bottom number into the top number.</i>	<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.263-269 <a href="#">Khan Academy</a> <a href="#">MathIsFun</a> <a href="#">Fraction to Decimal table</a> , this

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16			Change fraction to decimal			<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	has some common conversions they should memorize <a href="#">CoolMath</a> <a href="#">HomeSchoolMathWorksheet</a> <a href="#">Math Drills worksheets</a>
17	Comparing numbers	5	Comparing decimals to fractions	<i>How can I tell if a decimal is bigger than a fraction if they don't look alike?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.271-277
18	Fractions	6	Add and subtract fractions	<i>How can a number line make it easier for me to add or subtract fractions?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.279-282
19			Add and subtract like fractions	<i>What is different about this and the way I've always added or subtracted fractions?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.283-289
20			Add and subtract unlike fractions	<i>What is different about this and the way I've always added or subtracted fractions?</i>	<i>Students often get hung up trying to find the LCD. Let them use any common multiple of the denominators and then reduce the answer at the end of the problem.</i>	<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.291-298
21	Mixed numbers	6	Add and subtract mixed numbers	<i>What is different about this and the way I've always added or subtracted mixed numbers?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.299-305
22						<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	<a href="#">IXL: +-x/ Mixed numbers</a> <a href="#">HotMath: +-x/ Mixed numbers</a> <a href="#">MathAids worksheet</a> <a href="#">TLSBooks worksheet</a>

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23	Problem solving	1, 7	Use models to solve problems	<i>How can diagrams and a movie in my mind help be know what is happening in a problem?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.307-310
24	Multiply fractions	6	Multiply fractions	<i>What is different about this and the way I've always multiplied mixed numbers?</i>	<i>This is not a bad place to begin to help students understand that <math>X = 'Of'</math> as in <math>\frac{1}{2} X \frac{1}{3}</math> means <math>\frac{1}{2}</math> of <math>\frac{1}{3}</math></i>	<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.311-317
25						<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	<a href="#">MathAids worksheet</a> <a href="#">Math4Kids worksheets</a> <a href="#">Khan Academy</a> <a href="#">MathIsFun with examples</a>
26	Divide fractions	6	Divide fractions	<i>What is different about this and the way I've always divided mixed numbers?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.327-333
27						<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	<a href="#">Khan Academy</a> <a href="#">SoftSchools</a> <a href="#">IXL Practice</a> <a href="#">MathAids worksheet</a> <a href="#">LAVC worksheet</a>
28	Operations with fractions	1, 6, 7				<ul style="list-style-type: none"> <li>• Review</li> <li>• Assessment</li> </ul>	
29	Measurement systems conversion	1, 7	Convert measures between customary and metric systems	<i>When will I need to do this?</i>		<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.319-326
30	Unit 2 Project					<ul style="list-style-type: none"> <li>• Lesson</li> <li>• Guided Practice</li> <li>• Independent Practice</li> <li>• i-Ready</li> </ul>	GlencoeMath p.341-342
32						•	<a href="#">Webquest</a>

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<u>Word Wall Candidates</u>							
	Absolute value Zero pair Repeating decimal		Integer Graph Rational number		Positive integer Opposites Common denominator	Additive inverse Like fractions Mixed number	Negative integer Terminating decimal
<u>Authentic Application</u>							
Complete the webquest found <a href="http://questgarden.com/40/74/9/061107123649/process.htm">here</a> ( <a href="http://questgarden.com/40/74/9/061107123649/process.htm">http://questgarden.com/40/74/9/061107123649/process.htm</a> )							