



## Unit Calendar 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / Grade 6 (District Middle Curriculum)

Tuesday, August 27, 2013, 12:58PM



	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
<b>Unit:</b>	<b>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39</b>									
<u>Number Sense, Patterns, &amp; Algebraic Thinking</u>	■									
<u>Decimal Operations</u>		■ ■								
<u>Number Patterns and Fractions</u>			■ ■ ■							
<u>Operations with Fractions</u>			■ ■ ■	■ ■ ■						
<u>Integers</u>				■ ■ ■ ■ ■	■ ■					
<u>Equations, Inequalities, and Functions</u>					■ ■ ■ ■					
<u>Ratios, Proportions, and Percents</u>						■ ■ ■ ■	■ ■			
<u>Geometric Figures</u>							■ ■ ■ ■ ■			
<u>Measurement, Area, Surface Area, and Volume</u>								■ ■ ■ ■ ■		
<u>Probability &amp; Data Analysis</u>									■ ■ ■ ■ ■	
<u>Pre-Algebra Preview</u>										■ ■ ■ ■ ■
<u>Final Review</u>										■ ■ ■ ■ ■
	<b>1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39</b>									

Last Updated: Monday, October 15, 2012, 10:53AM



## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 12:59PM

Green Brook Township  
Public Schools

**Unit:** Number Sense, Patterns, & Algebraic Thinking (Week 1, 3 Weeks) 📅 📄

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 5, Operations & Algebraic Thinking

5.OA Write and interpret numerical expressions.

- 5.OA.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

5.OA Analyze patterns and relationships.

- 5.OA.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane.

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, Expressions & Equations

6.EE Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.1. Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.2. Write, read, and evaluate expressions in which letters stand for numbers.
- 6.EE.2a. Write expressions that record operations with numbers and with letters standing for numbers.

- 6.EE.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
- 6.EE.3. Apply the properties of operations to generate equivalent expressions.

6.EE Reason about and solve one-variable equations and inequalities.

- 6.EE.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.

<b>Description of Unit</b>	<b>Essential Questions</b>
<p>In this unit, students describe patterns and use them to solve problems. Students will also apply the order of operations to evaluate variable expressions involving powers and exponents and to solve equations. Students will then use these skills to find the perimeter and area of rectangles and to solve real-world problems.</p>	<ol style="list-style-type: none"> <li>1. How do we use PEMDAS in order to simplify numerical expressions?</li> <li>2. How can substitution simplify algebraic expressions?</li> <li>3. What are some real-life examples of how we can use perimeter and area?</li> </ol>
<b>Knowledge</b>	<b>Skills</b>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) a variable is a letter used to represent one or more numbers</li> <li>2) a variable expression consists of numbers, variables, and operations</li> <li>3) substitution is used when evaluating algebraic expressions</li> <li>4) a power is a way of writing repeated multiplication</li> <li>5) the base of a power is the factor</li> <li>6) the exponent of a power is the number of times the factor is multiplied</li> <li>7) the order of operations is a set of rules for evaluating an expression involving more than one operation</li> <li>8) an equation is a mathematical sentence formed by setting two expressions equal</li> <li>9) a solution of an equation is a number that you can substitute for a variable to make the equation true</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) recognize and extend patterns</li> <li>b) translate phrases into expressions</li> <li>c) evaluate variable expressions by substituting</li> <li>d) write repeated multiplication using exponents</li> <li>e) evaluate powers</li> <li>f) evaluate expressions using the order of operations</li> <li>g) use mental math to solve equations</li> <li>h) calculate perimeter and area</li> </ol>

10) the perimeter of a rectangle is calculated using the formula  $2L + 2W$  where L is the length and W is the width  
 11) the area of a rectangle is calculated by multiplying the length times the width

**Assessments**

**Pre-Assessment**

**Diagnostic: Written Test**

Students will take a pre-assessment to determine baseline knowledge and skills.

**Daily Formative Assessment**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Quiz 1**

**Formative: Written Test**

A quiz will assess students' skills on evaluating expressions, recognizing patterns, working with exponents, and using order of operations.

**Unit Test**

**Summative: Written Test**

This unit test will include skills from Quiz 1 in addition to using mental math, solving distance problems, and calculating perimeter and area of figures.

**Activities**

Textbook Scavenger Hunt

Students will complete a scavenger hunt to help familiarize them with the textbook.

Visual Pattern Activity

Students will create unique visual patterns, and then they will recognize and extend their classmates' patterns.

Towers Problem

Students will discover patterns and exponent rules.

Communicator Practice

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Students will solve differentiated practice problems on SmartPal response boards.

 [Textbook Scavenger Hunt](#)

Modified versions of quizzes and tests will be distributed.

Model problems for students.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

Utilize a graphic organizer for order of operations notes.

<b>Integrated/Cross-Disciplinary Instruction</b>	<b>Resources</b>
	<p><a href="#">McDougal Littell Course 2</a> textbook and resource materials</p> <p><a href="#">Kuta software</a></p> <p><a href="#">SMART Exchange</a> resources</p> <p> <a href="#">McDougall Littell Course 2</a></p> <p> <a href="#">SMART Exchange</a></p>

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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:00PM

Green Brook Township  
Public Schools

**Unit:** Decimal Operations (Week 4, 3 Weeks) 📅 📌

### New Jersey Core Curriculum Standards

#### **CommonCore: Mathematics, CommonCore: Grade 5, Number & Operations in Base Ten**

5.NBT Understand the place value system.

- 5.NBT.3. Read, write, and compare decimals to thousandths.
- 5.NBT.3b. Compare two decimals to thousandths based on meanings of the digits in each place, using  $>$ ,  $=$ , and  $<$  symbols to record the results of comparisons.
- 5.NBT.4. Use place value understanding to round decimals to any place.

5.NBT Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

#### **CommonCore: Mathematics, CommonCore: Grade 5, Measurement & Data**

5.MD Convert like measurement units within a given measurement system.

- 5.MD.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

#### **CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice**

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

**CommonCore: Mathematics, CommonCore: Grade 6, The Number System**

6. NS Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.

**Description of Unit**

In this unit, students will perform operations with decimals which include adding, subtracting, multiplying, and dividing. They will also round, compare, and order decimals. Students will then apply the skills learned to solving real-world problems involving scientific notation and the metric system.

**Essential Questions**

1. How do we use ordering and rounding to solve real-world problems?
2. How is computation with rational numbers similar and different to whole number computation?
3. Where do we use scientific notation?
4. What are some situations where we would use the metric system?

**Knowledge**

Students will know that:

- 1) the names for decimal places include tenths, hundredths, thousandths, etc.
- 2) decimals must be lined up when adding and subtracting decimal numbers
- 3) scientific notation is a representation of very small and very large numbers
- 4) a number written in scientific notation has the form  $c \times 10^n$  where c is greater than or equal to 1 and less than 10, and n is a whole number
- 5) the meter is the basic unit of length in the metric system
- 6) the gram is the basic unit of mass in the metric system
- 7) the liter is the basic unit of capacity in the metric system

**Skills**

Students will be able to:

- a) Compare, order, and round decimals
- b) Add and subtract decimals
- c) Multiply decimals
- d) Divide decimals
- e) Convert between scientific notation and standard form
- f) Convert between metric units in the metric system

**Assessments**

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Decimals Quiz**

**Formative: Written Test**

Students will be quizzed on their ability to compare, order, add, subtract, and multiply decimals.

**Unit Test**

**Summative: Written Test**

This unit test will include comparing, ordering, and rounding decimals; adding, subtracting, multiplying, and dividing decimals; writing numbers using scientific notation; estimating and converting metric units.

**Activities**

Ordering Decimals Activity

Each student will have an index card with a decimal on it. Students work in a group to order themselves from least to greatest.

Human Number Line

Each student will have an index card with a decimal on it. The class will create a human number line ordering the decimals from least to greatest.

Multiplication Mix-Up Activity

Each student will have an index card with a decimal on it. Students will form pairs or groups to create unique multiplication problems that they must solve.

Scientific Notation War

Students work in pairs to play a game of war using cards with numbers written in scientific notation and standard form.

Communicator Practice

Students will solve differentiated practice problems on SmartPal response boards.

 Scientific Notation War cards

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Modified versions of quizzes and tests will be distributed.

Model problems for students.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

When completing index card activities, difficulty of cards will be distributed according to student ability.

**Integrated/Cross-Disciplinary Instruction**

Science - Students will associate the metric system and its applications to work in their science classes.

**Resources**

McDougal Littell Course 2 textbook and resource materials

	<p><a href="#">Kuta software</a></p> <p><a href="#">SMART Exchange</a> resources</p> <p> <a href="#">McDougal Littell Course 2</a></p> <p> <a href="#">SMART Exchange</a></p>
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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:06PM

Green Brook Township  
Public Schools

**Unit:** Number Patterns and Fractions (Week 7, 3 Weeks) 📅 📄

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, The Number System

6.NS Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

- 6.NS.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

6.NS Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.

#### Description of Unit

In this unit, students will find the greatest common factor and least common multiple of two or more numbers. Using these skills, students will then compare and order fractions and mixed

#### Essential Questions

1. How can we compare and contrast numbers?
2. How are fractions and decimals used in everyday life?

numbers. Finally, they will write fractions as decimals and vice versa.

**Knowledge**

Students will know that:

- 1) a prime number is a whole number greater than 1 whose only factors are 1 and itself
- 2) a composite number is a whole number greater than 1 that has factors other than 1 and itself
- 3) the number 1 is neither prime nor composite
- 4) the greatest common factor (GCF) is the greatest whole number that is a factor of two or more nonzero whole numbers
- 5) two or more nonzero whole numbers are relatively prime if their GCF is 1
- 6) the least common multiple (LCM) is the least number that is a common multiple of two or more numbers
- 7) a fraction is a number of the form  $a/b$  ( $b \neq 0$ ) where  $a$  is called the numerator and  $b$  is called the denominator
- 8) equivalent fractions are fractions that represent the same part-to-whole relationship and have the same simplest form.
- 9) a fraction is in simplest form if its numerator and denominator have 1 as their GCF
- 10) the least common denominator (LCD) of two or more fractions is the least common multiple of the denominators
- 11) a mixed number has a whole number part and a fraction part
- 12) a proper fraction is a fraction whose numerator is less than its denominator
- 13) an improper fraction is a fraction whose numerator is greater than or equal to its denominator
- 14) repeating decimals are written with a bar over the digit(s) that repeat

**Skills**

Students will be able to:

- a) List the factors of a number
- b) Write a number as a product of prime numbers using a factor tree
- c) Find the greatest common factor of two or more numbers using a list or the slide method
- d) Find the least common multiple of two or more numbers using a list or the slide method
- e) Write equivalent fractions
- f) Compare and order fractions and mixed numbers
- g) Write fractions as decimals and decimals as fractions

 Slide Method

**Assessments**

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Quiz**

**Formative: Written Test**

Students will be quizzed on prime factorization, GCF, LCM, and equivalent fractions.

**Unit Test**

**Summative: Written Test**

This unit test will include prime factorization, GCF, LCM, equivalent fractions, comparing fractions and mixed numbers, ordering fractions and mixed numbers, converting between fractions and decimals.

**Fraction Cook Book Project**

**Summative: Other written assessments**

Students will demonstrate their ability to perform skills learned during the unit while utilizing their imaginations.

 Fraction Cook Book Project

<b>Activities</b>	<b>Activities to Differentiate Instruction</b>
<p><u>Prime Investigation</u> Students will become familiar with the concept of prime and composite numbers.</p> <p><u>Equivalent Fractions Activity</u> Each student will have an index card with a fraction on it, and they must find classmates with equivalent fractions.</p> <p><u>Ordering Fractions Activity</u> Each student will have an index card with a fraction on it. Students work in a group to order themselves from least to greatest by finding the least common denominator.</p> <p><u>Mixed Number Matching Activity</u> Each student will have an index card with a mixed number or improper fraction on it. They must find the classmate with the matching improper fraction or mixed number.</p> <p><u>Communicator Practice</u> Students will solve differentiated practice problems on SmartPal response boards.</p> <p> <u>Prime Investigation</u></p>	<p>Interactive Smartboard Activities will be utilized.</p> <p>Students will work in mixed-level groups.</p> <p>Students will be assigned optional and mandatory challenge problems on homework assignments.</p> <p>Enrichment worksheets will be available for classwork and/or homework.</p> <p>Homework will be modified as needed.</p> <p>Guided notes and study guides will be provided accordingly.</p> <p>Modified versions of quizzes and tests will be distributed.</p> <p>Model problems for students.</p> <p>Appropriately leveled problems for students to solve when participating in communicator practice will be provided.</p> <p>When completing index card activities, cards will be distributed according to student level of difficulty.</p>

<b>Integrated/Cross-Disciplinary Instruction</b>	<b>Resources</b>
	<p><a href="#">McDougal Littell Course 2</a> textbook and resource materials</p> <p><a href="#">Kuta software</a></p> <p><a href="#">SMART Exchange</a> resources</p> <p> <a href="#">McDougal Littell Course 2</a></p> <p> <a href="#">SMART Exchange</a></p>

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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:07PM

Green Brook Township  
Public Schools

**Unit:** Operations with Fractions (Week 10, 4 Weeks) 📅 📌

### New Jersey Core Curriculum Standards

#### **CommonCore: Mathematics, CommonCore: Grade 5, Number & Operations—Fractions**

5.NF Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators.

5.NF Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- 5.NF.7. Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

#### **CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice**

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### **CommonCore: Mathematics, CommonCore: Grade 6, The Number System**

6.NS Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

- 6.NS.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

<b>Description of Unit</b>	<b>Essential Questions</b>
<p>In this unit, students will be working with the basic operations of fractions. The fractions in this unit will include proper fractions, improper fractions, and mixed numbers. Students will utilize the concept of finding least common multiples to add and subtract fractions. Students will also multiply and divide fractions. Students will apply these skills/concepts to real-life situations and solve word problems.</p>	<ol style="list-style-type: none"> <li>1. How are least common multiples used when working with fractions?</li> <li>2. How are fractions used in real-life situations?</li> </ol>
<b>Knowledge</b>	<b>Skills</b>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) fractions can be written as improper fractions or mixed numbers</li> <li>2) when adding or subtracting fractions with the same denominator, the denominator stays the same</li> <li>3) least common denominators are least common multiples</li> <li>4) cross simplifying can assist in fraction multiplication problems</li> <li>5) two numbers are reciprocals if the numerator and the denominator are swapped</li> <li>6) to divide a fraction by a non zero number, multiply by its reciprocal</li> <li>7) customary units of length include the inch, foot, yard, and mile</li> <li>8) customary units of weight include the ounce, pound, and ton</li> <li>9) customary units of capacity include fluid ounces, cups, pints, quarts, and gallons</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) Add, subtract, multiply, and divide proper fractions</li> <li>b) Add, subtract, multiply, and divide mixed numbers</li> <li>c) Measure and estimate using customary units</li> <li>d) Convert between customary units</li> </ol>
<b>Assessments</b>	
<p><b>Daily Formative Assessments</b>  <b>Formative: Other written assessments</b>                      Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.</p> <p><b>Fraction Operations Quiz</b>  <b>Formative: Written Test</b></p>	

Students will take a quiz on adding, subtracting, and multiplying mixed numbers and fractions.

**Unit Test**

**Summative: Written Test**

The unit test will include adding, subtracting, multiplying, and dividing fractions and mixed numbers; estimating customary measurements; converting between customary units.

**Activities**

Adding Fractions Card Activity

Students work in pairs to add fractions. Students are each dealt two cards and must calculate the sum. Student with the greatest sum wins that round. (May also be used to practice fraction multiplication.)

Dividing Fractions Soccer Game

Project website on Smartboard. Students must solve the fraction division problem on their communicators. Students may be chosen at random to select the correct answer on the Smartboard.

Minch Activity

Students fold paper to create a magnified ruler to recognize and understand fraction ruler markings. They measure objects around the room in 'minches'.

Communicator Practice

Students will solve differentiated practice problems on SmartPal response boards.

 Dividing Fractions Soccer Game

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Modified versions of quizzes and tests will be distributed.

Model problems for students.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

**Integrated/Cross-Disciplinary Instruction**

**Resources**

McDougal Littell Course 2 textbook and resource materials

Kuta software

SMART Exchange resources

[NJASK Reference Sheet Grade 6](#)

 [McDougall Littell Course 2](#)

 [SMART Exchange](#)

 [NJASK Reference](#)

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## Unit Map 2013-2014

Green Brook Township School District

/ Course II Curriculum (D) / Grade 6 (District Middle Curriculum)

Tuesday, August 27, 2013, 1:07PM

Green Brook Township  
Public Schools

**Unit:** Integers (Week 14, 4 Weeks) 📅 📄

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, The Number System

6.NS Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- 6.NS.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
- 6.NS.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g.,  $-(-3) = 3$ , and that 0 is its own opposite.
- 6.NS.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- 6.NS.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.7. Understand ordering and absolute value of rational numbers.

- 6.NS.7a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- 6.NS.7b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.
- 6.NS.7c. Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.
- 6.NS.8. Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

<b>Description of Unit</b>	<b>Essential Questions</b>
<p>This unit will help students discover and use integer rules to evaluate numerical expressions that contain or yield negative integers. Students will compare and order integers and perform integer addition, subtraction, division, and multiplication. Finally, students will become familiar with the coordinate plane as they graph and identify points, as well as identify parts of the coordinate graph.</p>	<ol style="list-style-type: none"> <li>1. How can we compare and contrast numbers?</li> <li>2. How are negative numbers related to everyday life?</li> <li>3. How do we use integers to solve word problems?</li> <li>4. What are some real-world examples of where we use coordinate planes?</li> </ol>
<b>Knowledge</b>	<b>Skills</b>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) integers are whole numbers and their opposites</li> <li>2) negative integers are less than zero</li> <li>3) zero is neither positive nor negative</li> <li>4) two numbers are opposites if they are the same distance from zero on a number line but are on opposite sides of zero</li> <li>5) the absolute value of a number is the distance between the number and 0 on a number line</li> <li>6) when adding integers with the same sign, add the absolute values and use the common sign</li> <li>7) when adding integers with different signs, subtract the lesser absolute value from the greater and use the sign of the integer with the greater absolute value</li> <li>8) to subtract integers, use the phrase 'same, change, change'</li> <li>9) the product or quotient of two integers with the same sign is positive</li> <li>10) the product or quotient of two integers with different signs is negative</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) Compare and order integers</li> <li>b) Add, subtract, multiply, and divide integers</li> <li>c) Identify and plot points on a coordinate plane</li> <li>d) Evaluate expressions using the distributive property</li> </ol>

- 11) the coordinate plane is a two-dimensional graph with an x-axis and y-axis
- 12) the x-axis and y-axis meet at a point called the origin and divide the coordinate plane into four quadrants
- 13) points in the coordinate plane are represented by ordered pairs where the first number is the x-coordinate and the second number is the y-coordinate
- 14) the distributive property is  $a(b+c) = ab + ac$

**Assessments**

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Integers Quiz**

**Formative: Written Test**

Students will take a quiz on comparing and ordering integers, integer operations, order of operations with integers, and word problems involving integers.

**Real-Life Elevation Project**

**Formative: Other written assessments**

Students will research elevations of continents and respond to questions involving integer subtraction and comparison.

**Unit Test**

**Summative: Written Test**

This unit test will include material from the quiz in addition to identifying multiplicative and additive properties, plotting points on the coordinate plane, and simplifying expressions by combining like terms and using the distributive property.

 [Real-Life Elevation Project](#)

**Activities**

Human Number Line

Each student will have an index card with an integer on it. The class will create a human number line ordering the integers from least to greatest.

Integer Name Game

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Students write their names and add up integers that correspond to each letter in their name to find their 'Integer Name'.

Multiplying Integers Investigation

Students use a pattern to discover integer multiplication rules.

Multiplying Integers Card Game

Students work in pairs with a deck of cards where black cards are positive and red cards are negative. Students will each flip a card and solve the resulting multiplication problem.

Four Corners Property Activity

Each student will have an index card with an example of one of the properties on it. They will then move to the corner of the room with the correct property labeled.

Coordinate Plane Battleship

Students work in pairs to play a variation of Battleship.

Coordinate Plane Drawings

Students plot ordered pairs that create a picture.

Communicator Practice

Students will solve differentiated practice problems on SmartPal response boards.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Self-selection of problem-solving strategy.

Guided notes and study guides will be provided accordingly.

Modified versions of quizzes and tests will be distributed.

Model problems for students.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

Students will create an Integer Foldable to review rules for integer operations.

Virtual algebra tiles will be utilized on the Smartboard to introduce combining like terms.

**Integrated/Cross-Disciplinary Instruction**

Geometry - Students will practice combining like terms by finding the perimeter of figures.

**Resources**

McDougal Littell Course 2 textbook and resource materials

Kuta software

SMART Exchange resources

 McDougal Littell Course 2

 SMART Exchange

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Last Updated: Monday, September 17, 2012, 1:43PM



## Unit Map 2013-2014

Green Brook Township School District

/ Course II Curriculum (D) / Grade 6 (District Middle Curriculum)

Tuesday, August 27, 2013, 1:08PM

Green Brook Township  
Public Schools

**Unit:** Equations, Inequalities, and Functions (Week 18, 2 Weeks) 📅 📄

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, Expressions & Equations

6.EE Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.2a. Write expressions that record operations with numbers and with letters standing for numbers.
- 6.EE.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
- 6.EE.3. Apply the properties of operations to generate equivalent expressions.

6.EE Reason about and solve one-variable equations and inequalities.

- 6.EE.5. Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.
- 6.EE.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- 6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.

<p><b>Description of Unit</b></p>	<p><b>Essential Questions</b></p>
<p>In this unit, students will write and simplify algebraic expressions as well as apply the distributive property. They will also write and solve both one-step and two-step equations. Students will revisit and build upon these skills during the Pre-Algebra Preview Unit near the end of the school year.</p>	<ol style="list-style-type: none"> <li>1. How does simplifying an expression help us in solving equations?</li> <li>2. Why is important to understand algebraic equations?</li> <li>3. How can we write equations in order to represent real-life situations?</li> </ol>
<p><b>Knowledge</b></p>	<p><b>Skills</b></p>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) terms are the parts of an expression that are added together</li> <li>2) like terms are terms that have identical variable parts and can be combined</li> <li>3) a coefficient is the number in a term that is the product of a number and a variable</li> <li>4) a constant is a term that has a number but no variable</li> <li>5) an inverse operation is an operation that undoes another operation</li> <li>6) the properties of equality are used when solving one-step and two-step equations</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) Write variable expressions</li> <li>b) Simplify variable expressions</li> <li>c) Solve equations by adding or subtracting</li> <li>d) Solve equations by multiplying or dividing</li> <li>e) Solve two-step equations</li> </ol>
<p><b><u>Assessments</u></b></p>	
<p><b>Daily Formative Assessments</b>  <b>Formative: Other written assessments</b>                  Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.</p> <p><b>Equations Quiz</b>  <b>Summative: Written Test</b>                  This quiz will include translating expressions and equations, solving one-step and two-step equation, and open-ended word problems.</p>	
<p><b>Activities</b></p>	<p><b>Activities to Differentiate Instruction</b></p>
<p><u>Group Word Problems</u></p>	<p>Interactive Smartboard Activities will be utilized.</p>

<p>Students will work in groups of three or four to correctly solve a selected word problem and provide easy-to-understand steps for solving the problem with reasoning.</p> <p><u>Two-Step Equation Partner Practice</u> Students will complete a two-columned worksheet whose parallel problems yield the same answers and self-check their work.</p> <p><u>Communicator Practice</u> Students will solve differentiated practice problems on SmartPal response boards.</p>	<p>Students will work in mixed-level groups.</p> <p>Students will be assigned optional and mandatory challenge problems on homework assignments.</p> <p>Enrichment worksheets will be available for classwork and/or homework.</p> <p>Homework will be modified as needed.</p> <p>Guided notes and study guides will be provided accordingly.</p> <p>Modified versions of quizzes and tests will be distributed.</p> <p>Model problems for students.</p> <p>Appropriately leveled problems for students to solve when participating in communicator practice will be provided.</p>
<p><b>Integrated/Cross-Disciplinary Instruction</b></p> <p><u>Language Arts</u> - Students will utilize skills from language arts to write explanations of their word problem solutions.</p>	<p><b>Resources</b></p> <p><u>McDougal Littell Course 2</u> textbook and resource materials</p> <p><u>Kuta software</u></p> <p><u>SMART Exchange</u> resources</p> <p> <u>McDougall Littell Course 2</u></p> <p> <u>SMART Exchange</u></p>

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Last Updated: Monday, September 17, 2012, 1:46PM



## Unit Map 2013-2014

Green Brook Township School District

/ Course II Curriculum (D) / Grade 6 (District Middle Curriculum)

Tuesday, August 27, 2013, 1:08PM

Green Brook Township  
Public Schools

**Unit:** Ratios, Proportions, and Percents (Week 20, 3 Weeks)  

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, Ratios & Proportional Relationships

6.RP Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- 6.RP.2. Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , and use rate language in the context of a ratio relationship.
- 6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
- 6.RP.3a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
- 6.RP.3b. Solve unit rate problems including those involving unit pricing and constant speed.
- 6.RP.3c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means  $30/100$  times the quantity); solve problems involving finding the whole, given a part and the percent.

#### CommonCore: Mathematics, CommonCore: Grade 6, Expressions & Equations

6.EE Reason about and solve one-variable equations and inequalities.

- 6.EE.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.

**CommonCore: Mathematics, CommonCore: Grade 7, Geometry**

7.G Draw construct, and describe geometrical figures and describe the relationships between them.

- 7.G.1. Solve problems involving scale drawings of geometric figures, including computing actual lengths and areas from a scale drawing and reproducing a scale drawing at a different scale.

<b>Description of Unit</b>	<b>Essential Questions</b>
<p>In this unit, students will become acquainted with the topics of ratios, rates, proportions, and percents. They will begin the unit by investigating unit rates and ratios. Then they will learn about proportions and apply them to real-life situation using problem-solving methods. They also will solve problems involving scale drawings and models. They will see that there is a connection between ratios and scale drawings and why they are useful in everyday life. They will conclude the unit by examining the relationships between fractions, decimals, and percents and applying their knowledge of proportions to solving percent problems and their applications.</p>	<ul style="list-style-type: none"> <li>• How do mathematical ideas interconnect and build on one another to produce a coherent whole?</li> <li>• How can we use mathematical models to describe physical relationships?</li> <li>• How are ratios, rates, and proportions related?</li> <li>• How are ratios and proportions used in everyday life?</li> <li>• How are percents used in everyday life?</li> </ul>
<b>Knowledge</b>	<b>Skills</b>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) ratios are used to compare two items.</li> <li>2) unit rates are comparisons of two measurements in which one of the terms has a value of one.</li> <li>3) proportions are used when solving problems involving two different units.</li> <li>4) scale drawings and models use proportional scaling.</li> <li>5) percents are ratios out of one hundred.</li> <li>6) the percent proportion formula: is/of = %/100.</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) write and compare ratios.</li> <li>b) calculate and compare unit rates.</li> <li>c) solve problems using proportions.</li> <li>d) use proportions to solve problems involving scale models.</li> <li>e) convert between fractions, decimals, and percents.</li> <li>f) use the percent proportion in order to solve percent problems.</li> </ol>
<b>Assessments</b>	
<p><b>Pre-Assessment</b>  <b>Diagnostic: Other written assessments</b></p>	

Students will be assessed on their prior knowledge of ratios, unit rates, and solving proportions.

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Ratios, Rates, and Proportions Quiz**

**Formative: Written Test**

Students will take a quiz on ratios, unit rates, proportions, and scale drawings and models.

**Unit Test**

**Summative: Written Test**

This unit test will include ratios, unit rates, proportions, scale drawings and models, converting between fractions, decimals, and percents, and solving percent problems using the percent proportion.

**Activities**

Communicator Practice

Students will complete differentiated practice problems on SmartPal response boards.

Disney Map Activity

Students will use maps from Disney theme parks and rulers to answer questions based on finding actual distances and finding the scale of a map.

Ratios, Proportions, Scale Drawings, and Percents Stations

Students will work in groups at stations to complete real-world application problem-solving. The attachments give possible station activities that can be used. Problems should be assigned according to the needs of the students.

Fractions, Decimals, and Percents Bingo

Students will play Bingo using questions that will require students to convert either a fraction, decimal, or percent into its other two equivalent forms.

 Ratios, Proportions, Scale Drawings, and Percents Stations -

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Modified versions of quizzes and tests will be distributed.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

Provide challenge problems for students who complete stations early.

[ideas](#)

[Ratios, Proportions, Scale Drawings, and Percents Stations - more ideas](#)

<b>Integrated/Cross-Disciplinary Instruction</b>	<b>Resources</b>
<ul style="list-style-type: none"> <li>Students will use geography skills when using maps and finding the actual dimensions of famous landmarks.</li> </ul>	<p><a href="#">McDougal-Littel Course 2</a> textbook and resources</p> <p><a href="#">Kuta Software</a></p> <p><a href="#">Smartboard Exchange</a> resources</p> <p>SmartPal response boards</p> <p>Smartboard</p> <p>Fractions, Decimals, and Percents Bingo</p> <p> <a href="#">McDougal Littell Course 2</a></p> <p> <a href="#">Smart Exchange</a></p>

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## Unit Map 2013-2014

Green Brook Township School District

/ Course II Curriculum (D) / Grade 6 (District Middle Curriculum)

Tuesday, August 27, 2013, 1:08PM

Green Brook Township  
Public Schools

**Unit:** Geometric Figures (Week 23, 3 Weeks) 📅 📄

### New Jersey Core Curriculum Standards

#### **CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice**

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### **CommonCore: Mathematics, CommonCore: Grade 6, Geometry**

6.G Solve real-world and mathematical problems involving area, surface area, and volume.

- 6.G.3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems.

#### **CommonCore: Mathematics, CommonCore: Grade 7, Ratios & Proportional Relationships**

7.RP Analyze proportional relationships and use them to solve real-world and mathematical problems.

- 7.RP.2. Recognize and represent proportional relationships between quantities.

#### **CommonCore: Mathematics, CommonCore: Grade 7, Geometry**

7.G Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

- 7.G.5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.

#### **CommonCore: Mathematics, CommonCore: Grade 8, Geometry**

8.G Understand congruence and similarity using physical models, transparencies, or geometry software.

- 8.G.1. Verify experimentally the properties of rotations, reflections, and translations:
- 8.G.3. Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.

**Description of Unit**

In this unit, students will learn new vocabulary and geometric properties that they will need to apply to solve problems. They will identify the different types of angles and use their properties to find missing angles. Students also will identify polygons and identify corresponding parts of congruent and similar figures. They will use the proportionality of similar figures to find missing measurements. Finally, students will study three types of transformations: translations, reflections, and rotations.

**Essential Questions**

1. How does geometry explain or describe the structure of our world?
2. How do we use our knowledge of congruency to find missing information?
3. How can our knowledge about the area of rectangles help us discover the formulas for the area of other shapes?
4. Why can artists, architects, and other professionals be considered mathematicians?

**Knowledge**

Students will know that:

- 1) the types of angles include complementary, supplementary, acute, obtuse, right, and straight.
- 2) adjacent, vertical, and corresponding angles are created by intersecting and/or parallel lines.
- 3) triangles and polygons are classified by their angles, sides, and characteristics.
- 4) similar polygons have congruent angles and proportional sides.
- 5) transformations include translations, reflections, and rotations.

**Skills**

Students will be able to:

- a) classify angles and use their properties to find missing measurements.
- b) classify special pairs of angles and lines.
- c) classify triangles and two-dimensional polygons.
- d) use similar figures and proportions in order to finding missing measurements.
- e) complete transformations on polygons in the coordinate plane.

**Assessments**

**Pre-Assessment**

**Diagnostic: Other written assessments**

Students will be assessed on their prior knowledge of geometric vocabulary and concepts, such as angles, polygons, and transformations.

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Geometric Figures Quiz**

**Formative: Written Test**

Students will take a quiz to assess knowledge of classifying angles, finding missing angle measures, identifying special angle pairs, and classifying triangles and polygons.

**Unit Test**

**Summative: Written Test**

This unit test will include classifying angles, finding missing angle measures, identifying special angle pairs, classifying triangles and polygons, identifying corresponding parts of congruent figures, finding missing measures of similar figures, drawing lines of symmetry, and graphing translations and reflections of figures in the coordinate plane.

**Activities**

Communicator Practice

Students will complete differentiated practice problems on SmartPal response boards.

Angle Relationship Investigations

Students will learn properties of special angle pairs by investigating their angle measures using protractors. See Middle School Activity Generator - Course 2, Chapter 10 for samples.

Drawing with Polygons Activity

This activity can be completed using partners or as a whole class. One student will be given a card with an unusual picture that is constructed completely using polygons. This student must describe the picture only using geometric vocabulary and without using any visual cues. Meanwhile, the remaining student(s) will attempt to draw their interpretation of the description. This will assist the students in identifying polygons and also in using mathematical vocabulary in descriptions.

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Modified versions of quizzes and tests will be distributed.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

The NJASK reference sheet will be available for use to students on classwork and homework assignments.

Model how to use protractors by using interactive protractor tool for the Smartboard.

Integrated/Cross-Disciplinary Instruction	Resources
<ul style="list-style-type: none"> <li>Students will expand career explorations in 21st Century Skills curriculum by building an understanding of how mathematics, particularly geometry, is used in various careers such as architecture and engineering.</li> </ul>	<p><a href="#">McDougal Littell Math Course 2</a> textbook and resources</p> <p><a href="#">Kuta Software</a></p> <p><a href="#">Smartboard Exchange</a> resources</p> <p>SmartPal response boards</p> <p>Smartboard</p> <p>Protractors</p> <p> <a href="#">McDougal Littell Course 2</a></p> <p> <a href="#">Smart Exchange</a></p>

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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:09PM

Green Brook Township  
Public Schools

**Unit:** Measurement, Area, Surface Area, and Volume (Week 26, 4 Weeks)  

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, Geometry

6.G Solve real-world and mathematical problems involving area, surface area, and volume.

- 6.G.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- 6.G.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas  $V = l w h$  and  $V = b h$  to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.
- 6.G.4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.

#### CommonCore: Mathematics, CommonCore: Grade 7, Geometry

7.G Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

- 7.G.4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.

- 7.G.6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

<p><b>Description of Unit</b></p>	<p><b>Essential Questions</b></p>
<p>In this unit, students will investigate the concepts of area, surface area, and volume. They will begin the unit by learning how to find the area of rectangles, squares, parallelograms, triangles, trapezoids, and circles. They will explore how to find the area of irregular figures. Then, they will learn how to classify and sketch three-dimensional figures and their nets. Lastly, they will learn how to find the surface area and the volume for rectangular prisms and cylinders.</p>	<ol style="list-style-type: none"> <li>1. How is the area of a two-dimensional object similar to the surface area of a three-dimensional object?</li> <li>2. Where are the concepts of surface area and volume used in the real-world?</li> <li>3. How can spatial relationships be described by careful use of geometric language?</li> <li>4. How do geometric relationships help to solve real-life problems?</li> </ol>
<p><b>Knowledge</b></p>	<p><b>Skills</b></p>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) area measures the space within a two-dimensional object.</li> <li>2) space figures are three-dimensional figures that include prisms, cylinders, pyramids, spheres, and cones.</li> <li>3) surface area measures the total area of the exterior sides of a three-dimensional object.</li> <li>4) volume measures the capacity within a three-dimensional object.</li> </ol>	<p>Students will able to:</p> <ol style="list-style-type: none"> <li>a) find the area of regular and irregular two-dimensional figures.</li> <li>b) classify and sketch the nets of three-dimensional figures.</li> <li>c) calculate the surface area of space figures.</li> <li>d) calculate the volume of space figures.</li> </ol>
<p><b><u>Assessments</u></b></p>	
<p><b>Pre-Assessment</b>  <b>Diagnostic: Other written assessments</b>                  Students will be assessed on their prior knowledge of area, surface area, and volume.</p> <p><b>Daily Formative Assessments</b>  <b>Formative: Other written assessments</b>                  Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.</p> <p><b>Area Quiz</b>  <b>Formative: Written Test</b>                  Students will take a quiz to assess ability to find area of parallelograms, triangles, trapezoids, irregular figures, and area and circumference of circles.</p>	

<p><b>Area, Surface Area, and Volume Test</b>  <b>Summative: Written Test</b>                  This unit test will include area of two-dimensional figures, identifying and sketching nets of space figures, surface area of space figures, and volume of space figures.</p>	
<p><b>Activities</b></p> <p><u>Communicator Practice</u>                  Students will solve differentiated practice problems on SmartPal response boards.</p> <p><u>Area of Triangles Investigation</u>                  Students will complete an investigation to discover and build an understanding of the area formula for triangles.</p> <p><u>Area of Parallelograms Investigation</u>                  Students will complete an investigation to discover and build an understanding of the area formula for parallelograms.</p> <p><u>Volume Investigation</u>                  Students will complete an investigation to discover the formula for finding the volume of prisms by using linking cubes.</p>	<p><b>Activities to Differentiate Instruction</b></p> <p>Interactive Smartboard Activities will be utilized.</p> <p>Students will work in mixed-level groups.</p> <p>Students will be assigned optional and mandatory challenge problems on homework assignments.</p> <p>Enrichment worksheets will be available for classwork and/or homework.</p> <p>Homework will be modified as needed.</p> <p>Guided notes and study guides will be provided accordingly.</p> <p>Modified versions of quizzes and tests will be distributed.</p> <p>Appropriately leveled problems for students to solve when participating in communicator practice will be provided.</p> <p>The NJASK reference sheet will be available for use to students on classwork and homework assignments.</p>
<p><b>Integrated/Cross-Disciplinary Instruction</b></p> <ul style="list-style-type: none"> <li>Students will use skills from engineering when sketching and identifying nets of solids and analyzing two-dimensional and three-dimensional figures.</li> </ul>	<p><b>Resources</b></p> <p><u>McDougal Littel Course 2</u> textbook and resources</p> <p><u>Kuta Software</u></p> <p><u>Smart Exchange</u> Resources</p> <p>SmartPal response boards</p> <p>Smartboard</p>

Linking cubes

Graph paper

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 [Smart Exchange](#)

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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:09PM

Green Brook Township  
Public Schools

**Unit:** Probability & Data Analysis (Week 30, 4 Weeks) 📅 📌

### New Jersey Core Curriculum Standards

#### **CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice**

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### **CommonCore: Mathematics, CommonCore: Grade 6, Statistics & Probability**

6.SP Develop understanding of statistical variability.

- 6.SP.1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.
- 6.SP.2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
- 6.SP.3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.

6.SP Summarize and describe distributions.

- 6.SP.4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
- 6.SP.5. Summarize numerical data sets in relation to their context, such as by:
  - 6.SP.5a. Reporting the number of observations.
  - 6.SP.5b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.

- 6.SP.5c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
- 6.SP.5d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.

**CommonCore: Mathematics, CommonCore: Grade 7, Statistics & Probability**

7.SP Investigate chance processes and develop, use, and evaluate probability models.

- 7.SP.5. Understand that the probability of a chance event is a number between 0 and 1 that expresses the likelihood of the event occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event, a probability around 1/2 indicates an event that is neither unlikely nor likely, and a probability near 1 indicates a likely event.
- 7.SP.8. Find probabilities of compound events using organized lists, tables, tree diagrams, and simulation.
- 7.SP.8a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.
- 7.SP.8b. Represent sample spaces for compound events using methods such as organized lists, tables and tree diagrams. For an event described in everyday language (e.g., “rolling double sixes”), identify the outcomes in the sample space which compose the event.

<b>Description of Unit</b>	<b>Essential Questions</b>
<p>In this unit, students will study various concepts about data analysis and probability. Students will study the mean, median, and mode of a data set and how each of these values represents a measure of central tendency. They will then use bar graphs, line graphs, line plots, stem-and-leaf plots, box-and-whisker plots, and histograms to display and analyze the distribution of values in a data set. They will be able to distinguish between each graph and conclude which would be the best graph to use when representing a specific type of data. Students will also study the concepts of probability, including independent and dependent events. They will be able to apply the Counting Principle in order to find the total outcomes of a situation in which multiple options are available.</p>	<ol style="list-style-type: none"> <li>1. How can the collection, organization, interpretation, and display of data be used to answer questions?</li> <li>2. How do the visual representations of data influence other peoples’ decisions?</li> <li>3. What is the most appropriate graph to represent a specific data set?</li> <li>4. How can experimental and theoretical probabilities be used to make predictions or draw conclusions?</li> </ol>
<b>Knowledge</b>	<b>Skills</b>
<p>Students will know that: 1) mean, median, mode, and range are measures of central tendency.</p>	<p>Students will be able to: a) calculate the mean, median, mode, and range of a given set of data.</p>

2) bar graphs, line plots, histograms, stem-and-leaf plots, and box-and-whisker plots are assorted ways to display different types of data.  
 3) the probability of two events occurring is based upon the events being either independent or dependent.  
 4) the Counting Principle calculates the number of outcomes with given options.

b) construct and analyze bar graphs, line plots, histograms, stem-and-leaf plots, and box-and-whisker plots given a set of data.  
 c) calculate the probability of events.  
 d) use the Counting Principle to find the total outcomes.

**Assessments**

**Pre-Assessment**

**Diagnostic: Other written assessments**

Students will be assessed on their prior knowledge of simple probability and data displays.

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Data Analysis Quiz**

**Summative: Written Test**

Students will take a quiz on mean, median, mode, range, analyzing and creating data displays, and choosing appropriate data displays. Data displays will include: bar graphs, line graphs, stem-and-leaf plots, box-and-whisker plots, circle graphs, and histograms.

**Data Analysis & Probability Test**

**Summative: Written Test**

This unit test will include mean, median, mode, range, analyzing and creating data displays, and choosing appropriate data displays, simple probability, probability of compound events, tree diagrams, the Counting Principle, and experimental probability.

**Activities**

Communicator Practice

Students will complete differentiated practice problems on SmartPal response boards.

Class Survey

Students will complete a survey among their peers. They will develop the question, collect the data, and choose and create an appropriate data display. Students will also write a response in which they will explain why they

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

chose their data display and what they discovered from their findings.

Mean, Median, Mode, and Range Card Game

Students will play mean, median, mode, and range card game using playing cards in groups.

Box-and-Whisker Plot Activity

Students will be given a set of number cards and will blindly choose a pre-determined amount of cards. They will use this data set in order to create a box-and-whisker plot on a number line. They will repeat this process with varying amounts of chosen cards that are determined by the teacher. See page 15 of attached file for number cards.

Roller Derby Dice Game

Students will play against each other in pairs and use a column chart labeled 2 - 12, two dice, and counting chips in order to utilize experimental probability to make decisions. Each student will place 12 counting chips within the chart to indicate the sums that they believe will occur the most when two dice are rolled. Then the students will take turns rolling the dice. If they get a sum that has one of their counting chips on the chart, then they remove that chip. The first student to remove all of his/her chips is the winner. Students will need to use their knowledge of experimental probability in order to place their counting chips and strategize the game.

 Box-and-Whisker Plot Activity

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Modified versions of quizzes and tests will be distributed.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

Class survey topics will be provided for students

Allow calculator use for problems in which students are finding the mean of a data set.

<b>Integrated/Cross-Disciplinary Instruction</b>	<b>Resources</b>
<ul style="list-style-type: none"> <li>• Students will use data sets that integrate various curricula, such as science and geography when creating data displays.</li> <li>• Students will use language arts skills in the Class Survey when writing explanations for their choice of data display and their findings from their survey.</li> </ul>	<p><u>McDougal-Littel Course 2</u> textbook and resources</p> <p><u>Kuta Software</u></p> <p><u>Smartboard Exchange</u> resources</p> <p>SmartPal response boards</p> <p>Smartboard</p>

Dice

Playing cards

Grid paper

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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:10PM

Green Brook Township  
Public Schools

**Unit:** Pre-Algebra Preview (Week 34, 4 Weeks)  

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, Expressions & Equations

6.EE Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.2. Write, read, and evaluate expressions in which letters stand for numbers.
- 6.EE.2a. Write expressions that record operations with numbers and with letters standing for numbers.
- 6.EE.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
- 6.EE.3. Apply the properties of operations to generate equivalent expressions.
- 6.EE.4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them).

6.EE Reason about and solve one-variable equations and inequalities.

- 6.EE.6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.
- 6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.

- 6.EE.8. Write an inequality of the form  $x > c$  or  $x < c$  to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form  $x > c$  or  $x < c$  have infinitely many solutions; represent solutions of such inequalities on number line diagrams.

**CommonCore: Mathematics, CommonCore: Grade 7, Expressions & Equations**

7.EE Solve real-life and mathematical problems using numerical and algebraic expressions and equations.

- 7.EE.4a. Solve word problems leading to equations of the form  $px + q = r$  and  $p(x + q) = r$ , where  $p$ ,  $q$ , and  $r$  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.

**CommonCore: Mathematics, CommonCore: Grade 8, Functions**

8.F Define, evaluate, and compare functions.

- 8.F.1. Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output.
- 8.F.3. Interpret the equation  $y = mx + b$  as defining a linear function, whose graph is a straight line; give examples of functions that are not linear.

Description of Unit	Essential Questions
<p>During this unit, students will review their work with algebraic expressions and equations from earlier in the course and extend this knowledge into topics that they will learn in Pre-Algebra . First, they will review how to solve one- and two-step equations. Then, they will review how to write and simplify algebraic expressions, including how to use the distributive property. They will combine these concepts together when they solve multi-step equations. Students will learn how to solve inequalities and graph their possible solutions. Finally, students will graph linear equations by using tables.</p>	<ol style="list-style-type: none"> <li>1. How does simplifying an expression help us in solving equations?</li> <li>2. How are equations related to functions?</li> <li>3. How can we write equations in order to represent real-life situations?</li> </ol>
Knowledge	Skills
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) expressions are composed of terms and can require the distributive property when simplifying is necessary.</li> <li>2) the properties of equality are used when solving one-step, two-step, and multi-step equations.</li> <li>3) inequalities have an infinite number of solutions and are graphed using arrows.</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) simplify algebraic expressions.</li> <li>b) use the properties of equality in order to solve linear equations.</li> <li>c) solve one-step inequalities.</li> <li>d) graph linear equations by completing table and plotting coordinate points.</li> </ol>

4) linear equations contain two variables and their graphs are lines.

**Assessments**

**Pre-Assessment**

**Diagnostic: Other written assessments**

Students will be assessed on their retention of knowledge from earlier in the course. This will include writing expressions, simplifying expressions, and solving one and two-step equations.

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Equations and Expressions Quiz**

**Formative: Written Test**

Students will be assessed on writing algebraic expressions, the distributive property, simplifying algebraic expressions, solving one-step and two-step equations, and solving multi-step equations.

**Unit Test**

**Summative: Written Test**

This unit test will include writing expressions, simplifying expressions, solving one-step equations, solving two-step equations, solving multi-step equations, solving and graphing inequalities, and graphing linear equations using tables.

**Activities**

Communicator Practice

Students will complete differentiated practice problems on SmartPal response boards.

Modeling Equations with Algebra Tiles

The teacher will model on the Smartboard how to use algebra tiles to solve equations. Students can follow along and complete introductory problems using their own set. This will assist students in learning the algorithm for solving equations.

Equation Bingo

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

Enrichment worksheets will be available for classwork and/or homework.

Homework will be modified as needed.

Guided notes and study guides will be provided accordingly.

Students will play Bingo using questions that will require students to solve either one-step, two-step, or multi-step equations.

Inequality Matching Game

Students will play a matching game in which they are given playing cards that are faced down. Then they must pick three cards and try to match an inequality with its solution and graph. Students should be encouraged to make three piles of cards, one for the inequalities, one for the solutions, and one for the graphs, to create a greater chance of making matches.

Modified versions of quizzes and tests will be distributed.

Appropriately leveled problems for students to solve when participating in communicator practice will be provided.

<b>Integrated/Cross-Disciplinary Instruction</b>	<b>Resources</b>
<ul style="list-style-type: none"> <li>When students are translating sentences into algebraic equations, they will be utilizing skills from language arts to relate vocabulary to mathematical symbols and operations.</li> </ul>	<p><u>McDougal Littel Course 2</u> textbook and resources</p> <p><u>Kuta Software</u></p> <p><u>Smart Exchange</u> Resources</p> <p>SmartPal response boards</p> <p>Smartboard</p> <p>Algebra tiles</p> <p>Bingo boards</p> <p> <u>McDougal Littell Course 2</u></p> <p> <u>Smart Exchange</u></p>

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## Unit Map 2013-2014

Green Brook Township School District

/ **Course II Curriculum (D)** / **Grade 6 (District Middle Curriculum)**

Tuesday, August 27, 2013, 1:10PM

Green Brook Township  
Public Schools

**Unit:** Final Review (Week 38, 2 Weeks) 📅 📄

### New Jersey Core Curriculum Standards

#### CommonCore: Mathematics, CommonCore: Grade 6, Mathematical Practice

The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.

- 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.
- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
- 6. Attend to precision.
- 7. Look for and make use of structure.
- 8. Look for and express regularity in repeated reasoning.

#### CommonCore: Mathematics, CommonCore: Grade 6, Ratios & Proportional Relationships

6.RP Understand ratio concepts and use ratio reasoning to solve problems.

- 6.RP.1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
- 6.RP.2. Understand the concept of a unit rate  $a/b$  associated with a ratio  $a:b$  with  $b \neq 0$ , and use rate language in the context of a ratio relationship.
- 6.RP.3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
  - 6.RP.3b. Solve unit rate problems including those involving unit pricing and constant speed.
  - 6.RP.3c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means  $30/100$  times the quantity); solve problems involving finding the whole, given a part and the percent.
  - 6.RP.3d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

#### CommonCore: Mathematics, CommonCore: Grade 6, The Number System

6.NS Apply and extend previous understandings of multiplication and division to divide fractions by fractions.

- 6.NS.1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem.

6. NS Compute fluently with multi-digit numbers and find common factors and multiples.

- 6.NS.2. Fluently divide multi-digit numbers using the standard algorithm.
- 6.NS.3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
- 6.NS.4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1–100 with a common factor as a multiple of a sum of two whole numbers with no common factor.

6.NS Apply and extend previous understandings of numbers to the system of rational numbers.

- 6.NS.5. Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.
- 6.NS.6. Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.
- 6.NS.6a. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g.,  $-(-3) = 3$ , and that 0 is its own opposite.
- 6.NS.6b. Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.
- 6.NS.6c. Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.
- 6.NS.7a. Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram.
- 6.NS.7b. Write, interpret, and explain statements of order for rational numbers in real-world contexts.

### **CommonCore: Mathematics, CommonCore: Grade 6, Expressions & Equations**

6.EE Apply and extend previous understandings of arithmetic to algebraic expressions.

- 6.EE.1. Write and evaluate numerical expressions involving whole-number exponents.
- 6.EE.2. Write, read, and evaluate expressions in which letters stand for numbers.
- 6.EE.2a. Write expressions that record operations with numbers and with letters standing for numbers.
- 6.EE.2b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
- 6.EE.2c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).

6.EE Reason about and solve one-variable equations and inequalities.

- 6.EE.7. Solve real-world and mathematical problems by writing and solving equations of the form  $x + p = q$  and  $px = q$  for cases in which  $p$ ,  $q$  and  $x$  are all nonnegative rational numbers.

**CommonCore: Mathematics, CommonCore: Grade 6, Geometry**

6.G Solve real-world and mathematical problems involving area, surface area, and volume.

- 6.G.1. Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems.
- 6.G.2. Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas  $V = l w h$  and  $V = b h$  to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

**CommonCore: Mathematics, CommonCore: Grade 7, Geometry**

7.G Solve real-life and mathematical problems involving angle measure, area, surface area, and volume.

- 7.G.4. Know the formulas for the area and circumference of a circle and use them to solve problems; give an informal derivation of the relationship between the circumference and area of a circle.
- 7.G.5. Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.
- 7.G.6. Solve real-world and mathematical problems involving area, volume and surface area of two- and three-dimensional objects composed of triangles, quadrilaterals, polygons, cubes, and right prisms.

<b>Description of Unit</b>	<b>Essential Questions</b>
<p>During this unit, students will be reviewing concepts that they have studied throughout the course. The topics that will be reviewed during this time will be based upon student requests and results of a pre-assessment. These topics include integers, fractions, greatest common factors, least common multiples, percents, area, surface area, volume, and angles</p>	<ol style="list-style-type: none"> <li>1. How do we use integers to solve word problems?</li> <li>2. How can knowing the prime factorization of a number be used to find relationships between numbers?</li> <li>3. When is it beneficial to use one representation of a rational number rather than an equivalent representation?</li> <li>4. How are ratios, rates, and proportions related?</li> <li>5. Where do we use the various geometric concepts in real-life situations?</li> </ol>
<b>Knowledge</b>	<b>Skills</b>
<p>Students will know that:</p> <ol style="list-style-type: none"> <li>1) the slide method can be used to find the greatest common factor (GCF) and least common multiple (LCM) of two numbers.</li> <li>2) common denominators are needed when adding or subtracting fractions, but not for multiplying or dividing fractions.</li> </ol>	<p>Students will be able to:</p> <ol style="list-style-type: none"> <li>a) find the GCF and LCM of two numbers.</li> <li>b) add, subtract, multiply, and divide fractions.</li> <li>c) add, subtract, multiply, and divide integers.</li> <li>d) solve proportions.</li> <li>e) solve problems that contain percents.</li> </ol>

3) integer rules need to be followed when integers are being used in calculations.  
 4) proportions can be solved by creating equivalent fractions or by using the "butterfly method".  
 5) a percent is a ratio that is out of 100 and can be solved by using the percent proportion.  
 6) angle relationships include complementary, supplementary, vertical, and corresponding.  
 7) perimeter is the measurement around a two-dimensional figure and surface area is the measurement around a three-dimensional figure.  
 8) area is the space contained within a two-dimensional figure and volume is the space contained within a three-dimensional figure.

f) classify angles and find missing measurements by using their properties.  
 g) calculate the perimeter of two-dimensional and surface area of three-dimensional figures.  
 h) calculate the area of two-dimensional and volume of three-dimensional figures.

**Assessments**

**Pre-Assessment**

**Diagnostic: Other written assessments**

Students will be assessed on their prior knowledge of a variety of topics that have been taught during this course. This pre-assessment will determine how much review is needed for each topic.

**Daily Formative Assessments**

**Formative: Other written assessments**

Formative assessments, such as Do-Now assignments, homework assignments, Tickets-to-Leave, and SmartPal response board practice problems, will provide daily data for teachers.

**Final Exam**

**Summative: Written Test**

Students will be assessed on topics that have been taught throughout the course.

**Activities**

Communicator Practice

Students will complete differentiated practice problems on SmartPal response boards.

Fraction Review Centers

**Activities to Differentiate Instruction**

Interactive Smartboard Activities will be utilized.

Students will work in mixed-level groups.

Students will be assigned optional and mandatory challenge problems on homework assignments.

<p>Students will work cooperatively in centers to review fraction operations. Problems will include basic fraction operations and problem-solving situations.</p> <p><u>Integer Review Centers</u></p> <p>Students will work cooperatively in centers to review integer operations. Problems will include basic integer operations and problem-solving situations.</p> <p> <u>Integer Review Centers</u></p> <p> <u>Fraction Review Center - Problem-Solving Portion</u></p> <p> <u>Fraction Centers - Review &amp; Basic Operation Problems</u></p>	<p>Enrichment worksheets will be available for classwork and/or homework.</p> <p>Homework will be modified as needed.</p> <p>Guided notes and study guides will be provided accordingly.</p> <p>Modified versions of quizzes and tests will be distributed.</p> <p>Appropriately leveled problems for students to solve when participating in communicator practice will be provided.</p> <p>Challenge work will be provided to students who finish their centers before the other students.</p>
<p><b>Integrated/Cross-Disciplinary Instruction</b></p> <ul style="list-style-type: none"> <li>Students will solve word problems that integrate various curricula such as science, social studies, and consumer science when creating data displays.</li> </ul>	<p><b>Resources</b></p> <p><u>McDougal Littell Course 2</u> textbook and resources</p> <p><u>Kuta Software</u></p> <p><u>Smart Exchange</u> Resources</p> <p>SmartPal response boards</p> <p>Smartboard</p> <p> <u>McDougal Littell Course 2</u></p> <p> <u>Smart Exchange</u></p>

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