



Unit Calendar 2013-2014
 Green Brook Township School District
 / **Math Curriculum 4 (D)** / **Grade 4 (District Elementary Curriculum)**

Tuesday, August 27, 2013, 1:43PM



	Sep	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	Jun
Unit:	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				
<u>Operations and Algebraic Thinking</u>	■	■								
<u>Numbers and Operations in Base Ten</u>			■	■	■	■				
<u>Numbers and Operations-Fractions</u>					■	■	■	■	■	
<u>Measurement and Data</u>							■	■	■	■
<u>Geometry</u>									■	■
	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				

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Unit Map 2013-2014

Green Brook Township School District

/ **Math Curriculum 4 (D)** / Grade 4 (District Elementary Curriculum)

Tuesday, August 27, 2013, 2:02PM

Green Brook Township
Public Schools

Unit: Operations and Algebraic Thinking (Week 1, 7 Weeks)  

New Jersey Core Curriculum Standards

CommonCore: Mathematics, CommonCore: Grade 4, 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 4, Operations & Algebraic Thinking

4.OA Use the four operations with whole numbers to solve problems.

- 4.OA.1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
- 4.OA.2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
- 4.OA.3. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.

4.OA Gain familiarity with factors and multiples.

- 4.OA.4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.

4.OA Generate and analyze patterns.

- 4.OA.5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself.

Description of Unit	Essential Questions
<p>In this unit, students will use the four operations with whole numbers to solve problems. Students will explore basic fact strategies for multiplication and division and see how they are based on properties, patterns, and number relationships. Students will also gain a general understanding of algebra; how properties and the concepts of algebra are used to evaluate the expressions and solve multiplication and division equations. Students will also learn how to find factors and multiples of numbers as well as find patterns that follow a given rule.</p>	<p>What is the relationship between factors, products, and quotients?</p> <p>What strategies and patterns can you use to remember multiplication and division facts?</p> <p>What is the relationship between factors and products?</p> <p>When and how can you apply multiplication properties?</p> <p>How are multiplication and division expressions expressed?</p> <p>How can patterns help determine a rule?</p>
Knowledge	Skills
<p><i>Students will know that:</i></p> <ol style="list-style-type: none"> 1) expressions can be written to show both multiplication and division problems. 3) addition/subtraction and multiplication/division are inverse operations. 4) identifying and using multiplication properties will help master multiplication facts 5) a multiple is the product of a given whole number and another whole number 6) a variable is a letter or symbol that stands for a number or numbers 7) division tells how many groups or how many in each group 8) patterns in a multiplication table aid in retaining multiplication facts. 9) discovering a pattern will help determine a rule. 	<p><i>Students will be able to:</i></p> <ol style="list-style-type: none"> a) write and evaluate multiplication and division expressions. b) find a rule for a number relationship and write an equation for the rule. c) relate repeated addition to multiplication and repeated subtraction to division. d) multiply and divide facts through 12. e) identify patterns on a multiplication table. f) use multiplication and division to find missing factors. g) identify and use the properties of multiplication. h) write and evaluate multiplication and division expressions. i) write and solve multiplication and division equations. j) find factors and multiples using arrays and number lines.

Assessments

Daily Math Journals

Formative: Other written assessments

Students will keep a daily journal of the Problem of the Day. (4.OA.1, 4.OA.2, 4.OA.3, 4.OA.4, 4.OA.5)

Multiplication & Division Facts Pre-test

Diagnostic: Written Test

Pre-assessment on multiplication and division facts. (4.OA.1, 4.OA.2, 4.OA.3)

Quick Review

Formative: Written Test

Quick quiz on use of multiplication and division facts. (4.OA.1, 4.OA.2)

Multiplication & Division Facts Test

Summative: Written Test

Chapter 4 assessment on multiplication and division facts. (4.OA.1, 4.OA.2, 4.OA.3)

What's Missing?

Summative: Other written assessments

Enrichment assessment activity using knowledge of basic facts. (4.OA.1, 4.OA.2, 4.OA.3)

Algebra: Use basic facts pre-test

Diagnostic: Written Test

Pre-assessment on using basic facts in algebra. (4.OA.1, 4.OA.2, 4.OA.3, 4.OA.5)

Quick Review

Formative: Written Test

Quiz on multiplies, factors, and patterns. (4.OA.4, 4.OA.5)

Using Basic Facts Test

Summative: Written Test

Demonstrate knowledge on using basic facts. (4.OA.1, 4.OA.2, 4.OA.3, 4.OA.4, 4.OA.5)

Construct an Equal Square

Summative: Other written assessments

Enrichment assessment activity on patterns and finding a rule. (4.OA.3, 4.OA.5)

Benchmark Test

Summative: Benchmark Assessment

Benchmark test on multiplication/division facts, patterns, factors/multiples, and algebra in basic facts. (4.OA.1, 4.OA.2, 4.OA.3, 4.OA.4, 4.OA.5)

Activities	Activities to Differentiate Instruction
<p>Weekly Math Journals Operations Puzzle Investigate the Lesson Concept Hopscotch Facts Multiplication Songs and Tricks Math Catchers Modeling Properties Fact Family Dice Find Common Multiples Venn Diagrams using Hula Hoops Factor Farm</p> <p> Multiplication Songs and Tricks  Math Catchers  Fact Family Dice  Hula Hoop Venn Diagrams</p>	<p>Vocabulary cards/lists Study guides for assessments Pre-printed worksheets Visual Aids Modified tests Resource supplements Computer websites Tiered class/homework assignment Foldables and graphic organizers Math Interactive Notebooks</p>
Integrated/Cross-Disciplinary Instruction	Resources
<p><i>Science:</i> use basic facts to formulate and test hypothesis.</p> <p><i>Literature:</i> Read "The Best of Times" and find strategies using to solve difficult problems.</p> <p><i>Literature:</i> Read "One Riddle, One Answer" and identify property that plays role in solving riddle.</p> <p><i>Economics:</i> "Barbara's Muffins" recipe and use basic facts to figure out how much of each ingredient to include.</p> <p><i>Social Studies:</i> Using the changes in the cost of mail from 1860-1975 discuss changes in pattern.</p>	<p>HSP Math Grade 4 Teacher's Guide and Student book HSP Math Practice Workbook (practice work and spiral review) HSP Math Teacher's Resource Book: masters for enrichment, problem-solving, reteach activities, problem of day Manipulatives: workmats, unifix cubes and counters HSP ThinkCentral: student text; teacher's guide; enrichment, re-teach, problem solving and practice worksheets; on-line intervention and enrichment (MegaMath) activities; iTools SmartBoard technology Read Aloud Books HSP Leveled Math Concept Readers Math Interactive Notebooks</p>

Science: use thermometer and change in temperatures to solve patterns in multiplication.

Music: use time signature of 3/4 to discuss beats in a measure.

Technology: explore multiples by using a spreadsheet program

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Unit Map 2013-2014

Green Brook Township School District

/ **Math Curriculum 4 (D)** / **Grade 4 (District Elementary Curriculum)**

Tuesday, August 27, 2013, 2:03PM

Green Brook Township
Public Schools

Unit: Numbers and Operations in Base Ten (Week 8, 8 Weeks) 📅 📄

New Jersey Core Curriculum Standards

CommonCore: Mathematics, CommonCore: Grade 4, 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 4, Number & Operations in Base Ten

4.NBT Generalize place value understanding for multi-digit whole numbers.

- 4.NBT.1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.
- 4.NBT.2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons.
- 4.NBT.3. Use place value understanding to round multi-digit whole numbers to any place.

4.NBT Use place value understanding and properties of operations to perform multi-digit arithmetic.

- 4.NBT.4. Fluently add and subtract multi-digit whole numbers using the standard algorithm.
- 4.NBT.5. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 4.NBT.6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

Description of Unit	Essential Questions
<p>During this unit, students will be learning a variety of concepts to help them gain an understanding of numbers and operations in base ten. Students will begin by exploring topics such as place value through millions, comparing whole numbers and ordering whole numbers, all while using hands-on models and problem-solving strategies to help them gain a multi-sensory understanding of the material. Students will also have experiences rounding whole numbers through millions, estimating sums and differences, using mental math to find sums and differences, and adding and subtracting 3-digit and 4-digit numbers. Students will distinguish between situations where they need to find an exact answer or an estimate. Students will explore the skill of multiplying by 2-digit numbers, while using basic facts, place value and mental math to guide them. Problem-solving skills of <i>Solve a Simpler Problem and Multistep Problems</i> will help students apply their knowledge to real life situations. In the division section of this unit, students will learn how to complete long division problems of 2-digits and 3-digits by 1-digit with and without remainders and with zeros in the quotient.</p>	<p>How does the position of a digit determine its value?</p> <p>How are addition and subtraction of multi-digit numbers related to single-digit addition and subtraction facts and base-ten and place value concepts?</p> <p>How can you use place value and basic multiplication facts to help you solve multiplication of multi-digit whole numbers?</p> <p>How is division related to repeated subtraction, and how is it the inverse of multiplication?</p> <p>How can using patterns and basic division facts help you find the inverse relationship to recall quotients?</p>
Knowledge	Skills
<p><i>Students will know that:</i></p> <ol style="list-style-type: none"> 1. the position of a digit determines its value. 2. place value can be used to read, write, compare, round, and order large numbers. 3. place value can be determined by using the problem-solving strategy, <i>Use Logical Reasoning</i>. 4. addition and subtraction are inverse operations. 5. when rounding sums and differences, one moves up on the number line when the number is 5 or greater, and one moves down on the number line when the number is less than 5 . 6. the strategies for finding sums and differences are estimation, front-end estimation, and compatible numbers. 	<p><i>Students will be able to:</i></p> <ol style="list-style-type: none"> a. model, read, write, and identify the place value of whole numbers through millions. b. compare numbers through millions using base-ten blocks, number lines, and place value. c. solve problems by using the strategy <i>Use Logical Reasoning</i>. d. use prior knowledge about addition and subtraction to solve problems. e. round numbers through millions. f. estimate sums and differences using rounding. g. use a variety of strategies to find sums and differences mentally. h. solve problems by using the skills <i>Estimate or Exact Answer</i>. i. add and subtract 3 and 4-digit numbers.

7. some solutions require an exact answer while some only require an estimate.
8. adding and subtracting 3-digit numbers is the same as adding and subtracting 4-digit numbers, but with one additional place value.
9. the methods for adding and subtracting large numbers are pencil and paper, calculator, or mental math.
10. products can be found by using a basic fact and a pattern when mentally multiplying one and two-digit numbers by 10, 100, and 1,000.
11. to determine an estimate, one rounds factors or uses compatible numbers.
12. inverse operations can be used with the strategy, *work backward*, to solve a problem.
13. modeling and multiplying 2-digit and 3-digit numbers by 2-digit numbers involves multiplying each place value.
14. there are specific steps to follow in order to divide 2-digit and 3-digit numbers by 1-digit divisors.
15. estimates and exact answers can be found by mentally finding division patterns.
16. two problem-solving strategies are *Interpret the Remainder* and *Draw a Diagram*.
17. when dividing, a zero must be placed in the quotient to hold a place value.

- j. decide which method to use when adding and subtracting greater numbers.
- k. use a basic fact and a pattern to multiply mentally one and two-digit numbers by multiples of 10, 100, and 1,000.
- l. estimate products and use compatible numbers to find a product mentally.
- m. use the following problem-solving methods to solve a variety of real-life problems: *Solve a Simpler Problem*, *Multistep Problems*, *Choose paper and pencil, mental math*, or a *calculator*.
- n. model and multiply 2-digit and 3-digit numbers and money by 2-digit numbers.
- o. divide 2-digit and 3-digit numbers and money by 1-digit divisors with and without remainders.
- p. use mental math in order to find division patterns and estimate quotients.
- q. use a variety of problem solving skills to help divide numbers.
- r. solve a division problem with zeros in the quotient.

Assessments

Understand Place Value Pre-Test

Diagnostic: Written Test

Pre-Assessment for place value. (4.NBT.1, 4.NBT.2)

Quick Review

Formative: Written Test

Quiz on Place Value through Millions (4.NBT.1, 4.NBT.2)

Chapter 1 Test

Summative: Written Test

Chapter test on Understanding Place Value. (4.NBT.1, 4.NBT.2)

Missing Numbers

Summative: Other written assessments

Enrichment activity assessment for the end of chapter 1 on Place Value. (4.NBT.1, 4.NBT.2)

Add & Subtract Whole Numbers Pre-Test

Diagnostic: Written Test

Pre-Assessment on adding and subtracting whole numbers. (4.NBT.3, 4.NBT.4)

Quick Review

Formative: Written Test

Quick Quiz on estimating sums and differences and rounding numbers. (4.NBT.3, 4.NBT.4)

Chapter 2 Test - Adding and Subtracting Whole Numbers

Summative: Written Test

Test on adding and subtracting whole numbers. (4.NBT.3, 4.NBT.4)

Chapter 1-2 Benchmark Test

Summative: Written Test

Benchmark test on place value and adding and subtracting whole numbers. (4.NBT.1, 4.NBT.2, 4.NBT.3, 4.NBT.4)

Math Squares

Summative: Other written assessments

Enrichment activity assessment for adding and subtracting 4-digit and 3-digit numbers. (4.NBT.1)

Multiplying 2-digit numbers pre-test

Diagnostic: Written Test

Chapter 10 pre-assessment on multiplying by two-digit numbers. (4.NBT.5)

Quick Review

Formative: Written Test

Quiz on Multiplication Patterns and Multiplying 2-digits by 2-digits. (4.NBT.5)

Chapter 10 Test - Multiplication by 2-digit Numbers

Summative: Written Test

Chapter test on multiplying by 2-digit numbers. (4.NBT.5)

Homework Match-Up

Summative: Other written assessments

Enrichment assessment activity for chapter 10. (4.NBT.5)

Chapter 11-12 Pre-Test; Long Division

Diagnostic: Written Test

Pre-assessment on long division (4.NBT.6)

Chapter 11 Quiz; Division Patterns & Division Strategies

Formative: Written Test

Quiz on division patterns and strategies (4.NBT.6)

Chapter 12 Quiz; Long Division

Summative: Written Test

Quiz on dividing 3-digit numbers by 1-digit (4.NBT.6)

Chapters 10-12 Benchmark Test

Summative: Benchmark Assessment

Benchmark on Multiplying by 2-digit numbers and Long Division (4.NBT.4, 4.NBT.5, 4.NBT.6,)

Star Power

Summative: Other written assessments

Enrichment assessment activity for chapters 11-12 (4.NBT.6)

Math Journals on Problem of the Day

Formative: Other written assessments

Students will keep a journal on all of the Problem of the Day word problems. (4.NBT.1, 4.NBT.2, 4.NBT.3, 4.NBT.4, 4.NBT.5, 4.NBT.6)

Activities	Activities to Differentiate Instruction
Weekly Math Journals Climb the Math Mountain Work Up or Down Take a Seat Model 2-digit by 1-digit Division Maple Trees Learn Math Vocabulary; Remainder The Division Family Cheeseburger Division Steps Re-teach Divide 3-digit Money  The Division Family  Cheeseburger	Vocabulary cards/lists Study Guides for assessments Pre-printed worksheets Visual Aids Modified Tests Resource supplements Computer websites Tiered class/homework assignments Foldables and graphic organizers Math interactive notebooks
Integrated/Cross-Disciplinary Instruction	Resources
<i>Science</i> ; interpret data about stars & planets using place value	HSP Math Grade 4 ; Teacher's Guide and Student Book

Literature; read-aloud "The Warlords Beads", make models of an abacus.

Social Studies; United States coastline length

Literature Connection; read-aloud "A Remainder of One" and students write the division problems.

Health Connection; use division to determine how many portions are in a certain amount of food.

Social Studies Connection; Transcontinental Railroad estimation problem.

Science; problem solving connects to science by finding costs of household appliances by using division.

Technology; using a calculator students will explore different methods of interpreting remainders

HSP Math Practice Workbook; Practice work and spiral review

HSP Math Teacher's Resource Book; masters for enrichment, problem solving, re-teaching activities, problem of the day

Manipulatives; workmats, unifix cubes and counters

HSP ThinkCentral; student textbook, teacher's guide, enrichment, re-teach, problem solving and practice worksheets, on-line intervention and enrichment (MegaMath) activities, iTools

SMART Board Technology

Read Aloud Books

HSP Leveled Math Concept Readers

Math Interactive Notebooks

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Unit Map 2013-2014

Green Brook Township School District

/ **Math Curriculum 4 (D)** / **Grade 4 (District Elementary Curriculum)**

Tuesday, August 27, 2013, 2:03PM

Green Brook Township
Public Schools

Unit: Numbers and Operations-Fractions (Week 16, 8 Weeks) 📅 📄

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CommonCore: Mathematics, CommonCore: Grade 4, Mathematical Practice

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- 4. Model with mathematics.
- 5. Use appropriate tools strategically.
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CommonCore: Mathematics, CommonCore: Grade 4, Number & Operations—Fractions

4.NF Extend understanding of fraction equivalence and ordering.

- 4.NF.1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.
- 4.NF.2. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model.

4.NF Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

- 4.NF.3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$.
- 4.NF.3a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
- 4.NF.3b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model.
- 4.NF.3c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.

- 4.NF.3d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.
- 4.NF.4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
- 4.NF.4a. Understand a fraction a/b as a multiple of $1/b$.
- 4.NF.4b. Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number.
- 4.NF.4c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem.

4.NF Understand decimal notation for fractions, and compare decimal fractions.

- 4.NF.5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
- 4.NF.6. Use decimal notation for fractions with denominators 10 or 100
- 4.NF.7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model.

Description of Unit

In this unit, students will extend their understanding of fraction equivalence and ordering. Students will learn and explore the concepts of comparing and ordering fractions and mixed numbers, as well as adding and subtracting fractions with like and unlike denominators and mixed numbers. Students will also learn the relationship between fractions and mixed numbers and decimals and will be able to compare and order fractions and mixed numbers.

Essential Questions

- How are numbers that represent fractional parts modeled, compared, and ordered?
- How can your understanding of fractions and mixed numbers help you add and subtract?
- How do the models that represent one whole, one tenth, and one hundredth relate to each other?

Knowledge

Students will know that:

- 1) to read fractions, you must read the numerator first, followed by the digit in the denominator.
- 2) equivalent fractions are two or more fractions that represent the same amount or the same point on a number line.
- 3) when comparing fractions, the denominators should be the same.
- 4) you must divide to make an improper fraction into a mixed number.

Skills

Students will be able to:

- a) read and write fractions.
- b) model equivalent fractions.
- c) compare and order fractions.
- d) read and write mixed numbers and express fractions greater than one as mixed numbers.
- e) compare and order mixed numbers.
- f) add and subtract like fractions.
- g) add and subtract mixed numbers with like denominators.

5) to compare mixed numbers, you must first compare the whole numbers and then the fractions.

6) you can only add or subtract fractions once all fractions have the same denominator.

7) to add and subtract mixed numbers, the fractions must have like denominators.

8) a decimal, a number with one or more digits to the right of the decimal point, is another way to represent a fractional part of a whole

9) tenths are one of ten equal parts, hundredths are one of 100 equal parts, and thousandths are one of 1,000 equal parts

10) there is a direct relationship between mixed numbers and decimals.

11) comparing and ordering decimals are similar to comparing and ordering fractions.

h) add and subtract fractions with unlike denominators.

i) model, read, and write fractions as decimals.

j) read and write fractions as decimals to the thousandths place.

k) find equivalent decimals.

l) model, read, and write mixed numbers as decimals.

m) compare and order decimals.

n) solve problems by using the skill *draw conclusions*.

o) extend understanding of fraction equivalence and ordering.

p) build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

q) build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

r) understand decimal notation for fractions and compare decimal fractions.

Assessments

Fractions & Mixed Numbers Pre-Assessment (Ch 15)

Diagnostic: Written Test

Students will demonstrate their prior understanding of fractions and mixed numbers on a pre-test. (4.NF.1, 4.NF.2)

Equivalent Fractions and Comparing & Ordering Fractions Quiz

Summative: Written Test

Quick quiz on modeling and finding equivalent fractions, as well as comparing and ordering fractions. (4.NF.1, 4.NF.2)

Fractions & Mixed Numbers Assessment

Summative: Written Test

Students will demonstrate knowledge of equivalent fractions, comparing and ordering fractions and mixed numbers, and reading & writing mixed numbers on a chapter assessment. (4.NF.1, 4.NF.2)

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Summative: Other written assessments

Students will extend and demonstrate their knowledge and skills by completing a performance assessment. (4.NF.1, 4.NF.2)

Add and Subtract Fractions and Mixed Numbers Pre-Assessment

Diagnostic: Written Test

Students will demonstrate their prior knowledge of adding and subtracting fractions and mixed numbers on a pre-test. (4.NF.3, 4.NF.3a, 4.NF.3b)

Adding and Subtracting Fractions Quiz

Formative: Written Test

Students will add and subtract fractions with like and unlike denominators on a quiz. (4.NF.3, 4.NF.3a, 4.NF3b)

Adding and Subtracting Fractions & Mixed Numbers Assessment

Summative: Written Test

Students will demonstrate knowledge of chapter on an assessment. (4.NF.3, 4.NF.3a-3d)

Fractions on a Ruler

Summative: Other written assessments

Performance assessment on adding and subtracting fraction and whole numbers. (4.NF.3, 4.NF.3a-3c)

Decimals and Place Value Pre-Test

Diagnostic: Written Test

Students will demonstrate prior knowledge on a pre-test. (4.NF.5, 4.NF.6, 4.NF.7)

Quiz on fractions, decimals, and reading and writing decimals to thousandths

Formative: Written Test

Students will take a quiz demonstrating their knowledge of fractions and decimals, and decimals to thousandths. (4.NF.5, 4.NF.6)

Understanding Decimals & Place Value Assessment

Summative: Instructional/Assessment Focus

Assessment on understanding decimals and place value. (4.NF.5, 4.NF.6, 4.NF.7)

An Apple a Day

Summative: Other written assessments

Performance Assessment for Understanding Decimals & Place Value (4.NF.5, 4.NF.6, 4.NF.7)

Fractional Numbers & Operations Benchmark

Summative: Benchmark Assessment

Benchmark test on all three fraction chapters. (4.NF.1, 4.NF.2, 4.NF.3, 4.NF.3a-3d, 4.NF.5, 4.NF.6, 4.NF.7)

Activities

Weekly Math Journals
 What Fraction is Red?
 Color the Equivalent Fractions
 Investigate the Concept; Fraction Bars & Number Lines
 Mix-and-Match Fractions
 Mixed Number Shapes

Activities to Differentiate Instruction

Vocabulary cards/lists
 Study guides for assessments
 Pre-printed worksheets
 Visual Aids
 Modified tests
 Resource supplements
 Computer websites

Mixed Numbers on a Ruler
 Mixed Number Maze
 Write Number Riddles
 Model Addition & Subtraction with Shapes
 Pizza Party
 Riddle Fun Secret Code Activity
 Fraction Circle
 Race to One
 Sticker Collection
 Ant Lengths
 Equivalent Decimals using Grid Paper
 Superlatives
 Tiny Robots
 Mystery Number
 Order, Please!

Tiered class/homework assignment
 Foldables and graphic organizers
 Math Interactive Notebooks

Integrated/Cross-Disciplinary Instruction	Resources
<p><i>Social Studies Connection;</i></p> <ul style="list-style-type: none"> • Calculate Profit by Multiplying Decimals • United States Activity • Bridge Lengths • Regions of the United States • Currency & Coins <p><i>Science Connection;</i></p> <ul style="list-style-type: none"> • Flashlight Battery Voltage • Shooting Stars and Falling Stars • North Atlantic Width number lines • Growth in Animals and Plants using Mixed Numbers <p><i>Reading Connection;</i></p> <ul style="list-style-type: none"> • <u>If You Made a Million</u> 	<p>HSP Math Grade 4; Teacher’s Guide and Student Book HSP Math Practice Workbook; Practice work and spiral review HSP Math Teacher’s Resource Book; masters for enrichment, problem solving, re-teaching activities, problem of the day Manipulatives; workmats, unifix cubes and counters HSP ThinkCentral; student textbook, teacher’s guide, enrichment, re-teach, problem solving and practice worksheets, on-line intervention and enrichment (MegaMath) activities, iTools SMART Board Technology Read Aloud Books HSP Leveled Math Concept Readers Math Interactive Notebooks</p>

- [Polar Bear Math: Learning About Fractions from Klondike and Snow](#)
- [Fraction Fun](#)

Physical Education/Health Connection;

- Sleep Recommendations & Simplest Form
- Fruit Servings per day

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Unit Map 2013-2014

Green Brook Township School District

/ **Math Curriculum 4 (D)** / **Grade 4 (District Elementary Curriculum)**

Tuesday, August 27, 2013, 2:04PM

Green Brook Township
Public Schools

Unit: Measurement and Data (Week 24, 8 Weeks)  

New Jersey Core Curriculum Standards

CommonCore: Mathematics, CommonCore: Grade 4, 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 4, Measurement & Data

4.MD Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

- 4.MD.1. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table.
- 4.MD.2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
- 4.MD.3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

4.MD Represent and interpret data.

- 4.MD.4. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots.

4.MD Geometric measurement: understand concepts of angle and measure angles.

- 4.MD.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:
- 4.MD.5a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a “one-degree angle,” and can be used to measure angles.
- 4.MD.5b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees.
- 4.MD.6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
- 4.MD.7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

Description of Unit	Essential Questions
<p>In this unit, students will solve problems involving measurement and conversion of measurement from a larger unit to a smaller unit using both customary and metric units. Students will use the four operations to solve related word problems involving distances, intervals of time, liquid volumes, masses of objects, and money. Students will also represent and interpret data, specifically using a line plot that will allow students to add and subtract fractions. Students will apply and calculate the area and perimeter for rectangles. They will also understand concepts of angles and be able to measure angles.</p>	<p>How can using the appropriate standard units and tools help you to tell time?</p> <p>When would it be appropriate to use a line plot to display information?</p> <p>How do points, lines, and rays differ?</p> <p>When would you need to change customary units?</p>
Knowledge	Skills
<p><i>Students will know that:</i></p> <ol style="list-style-type: none"> 1) telling time requires knowledge of the relationship among seconds, minutes, and hours. 2) line plots provide a visual display of how data is distributed. 3) a ray is part of a line; two rays form an angle when they share a point. 4) angles are classified based on their relationship to 90 degrees. 5) a protractor is a tool marked off in intervals of 0 degrees to 180 degrees and is used to measure the size of an angle. 	<p><i>Students will be able to:</i></p> <ol style="list-style-type: none"> a) estimate and tell time to the nearest minute and second. b) use line plots to read and organize data. c) identify, describe, and draw points, lines, line segments, rays, and planes. d) measure, classify, and draw right, acute, obtuse, and straight angles, also using a protractor. e) identify, draw, and label parts of a circle. f) change linear units by multiplying or dividing. g) estimate and measure the weights of objects and change units of weight.

- 6) when converting measurements from big to small one multiplies
- 7) when converting measurement from small to big one divides
- 8) perimeter is the measurement around the outside/edges of a shape.
- 9) area is the measurement of the space inside a shape.
- 10) the formula for finding perimeter is to add up all of the sides.
- 11) the formula for finding area is length times width.

- h) estimate and measure the capacity of containers and change units of capacity.
- i) estimate and measure the capacity of containers and change units of capacity.
- j) estimate and measure metric length.
- k) change metric linear units by multiplying or dividing.
- l) estimate and measure the mass of objects and change units of mass.
- m) estimate and measure perimeter.
- n) use a formula to find perimeter.
- o) estimate and find area.
- p) measure and find area by counting, multiplying, and using a formula.
- q) explore the relationship between perimeter and area.

Assessments

Pre-Test on Measurement and Data

Diagnostic: Instructional/Assessment Focus

Students will complete a pre-test to determine their knowledge of unit topics. (4.MD.1, 4.MD.2, 4.MD.3, 4.MD.4, 4.MD.5, 4.MD.6, 4.MD.7)

Measurement (metric and customary) Packet

Formative: Other written assessments

Students will demonstrate their knowledge of measurement by completing a measurement packet during station work. (4.MD.1)

Converting Measurements Quiz

Formative: Other written assessments

Students will demonstrate their knowledge of converting measurements (using a conversion chart) by completing a quiz. (4.MD.1)

Perimeter/Area Quiz

Formative: Other written assessments

Students will demonstrate their knowledge of perimeter and area by completing a quiz. (4.MD.3)

Redesign the Classroom Project

Formative: Personal Project

Students will be given several swatches of flooring and wallpaper. Each flooring and wallpaper has a different price per foot.

Using the classroom dimensions, students must select a new flooring and wallpaper for the classroom. They will calculate how much it will cost and will write a check to pay for the materials. (4.MD.3)

Represent and Interpret Data Activity

Formative: Instructional/Assessment Focus

Students will create a class line plot to find and interpret the difference in length between the longest and shortest specimens in an insect collection. Students will find the mean, median, mode, and range of the data. (4.MD.4)

Protractor Quiz

Formative: Other written assessments

Students will demonstrate their knowledge of protractors by reading angles and drawing angles. Students will also classify angles. (4.MD.5, 4.MD.6, 4.MD.7)

Measurement and Data Benchmark

Summative: Benchmark Assessment

A benchmark test on all unit content. (4.MD.1, 4.MD.2, 4.MD.3, 4.MD.4, 4.MD.5, 4.MD.6, 4.MD.7)

Activities	Activities to Differentiate Instruction
Customary and Metric Flip Books Shiver Me Measurement Math Centers Measurement Task Cards Measurement Tic-Tac-Toe Board Popsicle Sticks Angles Project Types of Lines Simon Says Protractor SmartBoard Lesson Protractor Packet (great for guided math): -measuring angles -drawing angles -Memory game with angles Redesign the Classroom Project- calculate the classroom's perimeter and area by picking out new flooring and wallpaper Perimeter/Area Robots Project Perimeter/Area Interactive SmartBoard lesson Design a Mansion/Design a Zoo Project Mass Scavenger Hunt/Fruit Basket Mass (great for guided math) GallonBot project- students make a robot to demonstrate customary capacity	Vocabulary cards/lists Study Guides for assessments Pre-printed worksheets Visual Aids Modified Tests Resource supplements Computer websites Tiered class/homework assignments Foldables and graphic organizers Math interactive notebooks Conversion Charts
Integrated/Cross-Disciplinary Instruction	Resources
<i>Science: using balances and spring scales to participate in various activities with mass</i>	HSP Math Grade 4; Teacher's Guide and Student Book HSP Math Practice Workbook; Practice work and spiral review

Writing; math journal unit explaining how you got various circles diameter, radius, and circumferences

Literature Connection; read [Sir Circumference and the First Round Table](#) by Cindy Neuschwander

Technology; SmartBoard lessons (perimeter/area, protractor practice, angles) and apps for the iPads:

Universal converter (Free) - This converter introduces students to mass, speed, volume, distance, time and temperature.
Unit Circle HD (\$.99) - Perfect to help your students understand how a unit circle works.

HSP Math Teacher's Resource Book; masters for enrichment, problem solving, re-teaching activities, problem of the day

Manipulatives; workmats, unifix cubes and counters

HSP ThinkCentral; student textbook, teacher's guide, enrichment, re-teach, problem solving and practice worksheets, on-line intervention and enrichment (MegaMath) activities, iTools

SMART Board Technology

Read Aloud Books

HSP Leveled Math Concept Readers

Math Interactive Notebooks

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Unit Map 2013-2014

Green Brook Township School District

/ **Math Curriculum 4 (D)** / **Grade 4 (District Elementary Curriculum)**

Tuesday, August 27, 2013, 2:06PM

Green Brook Township
Public Schools

Unit: Geometry (Week 32, 8 Weeks) 📅 📄

New Jersey Core Curriculum Standards

CommonCore: Mathematics, CommonCore: Grade 4, 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 4, Geometry

4.G Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

- 4.G.1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
- 4.G.2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.
- 4.G.3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

Description of Unit

In this unit, students will understand the building blocks of geometry relative to points, lines, planes, and their classifications and relationships.

Essential Questions

- How do points, lines, and rays differ?
- How can you describe the relationship between two lines?
- How can you classify triangles?

Knowledge	Skills
<p><i>Students will know that:</i></p> <ol style="list-style-type: none"> 1) A ray is part of a line. 2) A point has no dimension. 3) A line segment is named by the two end points, such as AB. 4) Angles are classified based on their relationship to 90 degrees: acute, obtuse, right. 5) A polygon is a closed figure with straight lines. 6) Triangles are classified by the length of their sides: <ul style="list-style-type: none"> scalene: all sides are not equal in length equilateral: all sides are equal in length isosceles: two sides are equal in length 7) Figures can have lines of symmetry, which means they can be folded along a line so that the two parts match exactly. 	<p><i>Students will be able to:</i></p> <ol style="list-style-type: none"> a. Identify, describe, and draw points, lines, line segments, rays, and planes. b. Draw and identify lines and angles, and classify shapes by properties of their lines and angles. c. Measure, classify, and draw right, acute, obtuse, and straight angles. d. Identify, describe, and draw intersecting, parallel, and perpendicular lines. e. Identify, classify, and describe polygons and determine whether polygons are regular or not regular. f. Classify triangles by the length of their sides and the measures of their angles. g. Draw the lines of symmetry on polygons and pictures.
<p><u>Assessments</u></p>	
<p>Geometry Pre-Test Diagnostic: Other written assessments Students will demonstrate prior knowledge of skills and knowledge in the geometry unit. (4.G.1, 4.G.2, 4.G.3)</p> <p>Geometry Scavenger Hunt Formative: Other visual assessments Students will complete a scavenger hunt throughout the school to find various lines, angles, and polygons. (4.G.1, 4.G.2)</p> <p>ABC Lines of Symmetry Activity Formative: Personal Project Students will sort the letters of the alphabet into the number of lines of symmetry each contains. They will paste the letters into the appropriate headings and then draw the lines of symmetry. (4.G.3)</p> <p>Polygon Quiz Formative: Instructional/Assessment Focus</p>	

Students will demonstrate their knowledge of polygons by completing a quiz. (4.G.2)

Greedy Triangle Writing Activity

Formative: Other written assessments

Students will use their writing skills in an assessment that has them assume the role of a specific polygon. They will write a story about that polygon's typical day. (4.G.2)

Geometry Benchmark

Summative: Benchmark Assessment

Students will complete the end of unit benchmark. (4.G.1, 4.G.2, 4.G.3)

Activities	Activities to Differentiate Instruction
<p>Polygon Sort Use geoboards to practice polyons and angles (record on geoboard paper) Geometry Flipbooks Geometry Picture Dictionary Geometry Scavenger Hunt Buggy About Geometry Packet (great for stations): -lines and angle sorts -geometry zoo activity -scavenger hunt -geometry robot glyph I Have, Who Has (geometry edition) Interactive SmartBoard lessons Geometry Simon Says ABC Lines of Symmetry activity- find the lines of symmetry for each letter. Make a sort and paste the letters into the appropriate headings.</p>	<p>Vocabulary cards/lists Study guides for assessments Pre-printed worksheets Visual Aids Modified tests Resource supplements Computer websites Tiered class/homework assignment Foldables and graphic organizers Math Interactive Notebooks</p>
Integrated/Cross-Disciplinary Instruction	Resources
<p><i>Writing: The Greedy Triangle Creative Writing Activity- students will pick a polygon and will write, "A Day in the Life of a ..." and will make a trading card for their polygon.</i></p> <p><i>Literature Connection: read Grandfather Tang's Story and then have students create a tangram storyboard by using tangrams to create characters and write a story.</i></p>	<p>HSP Math Grade 4; Teacher's Guide and Student Book HSP Math Practice Workbook; Practice work and spiral review HSP Math Teacher's Resource Book; masters for enrichment, problem solving, re-teaching activities, problem of the day Manipulatives; workmats, unifix cubes and counters</p>

Technology: SmartBoard interactive lessons, app for the iPad: Geometry 4 Kids (\$.99) - Appropriate for all elementary grades. It covers line segments, rays and angles, congruence and transformations, critical thinking and more.

Art: students write their names in block lettering on a folded piece of cardstock. They will cut it out and glue onto construction paper. This will be the body of their alien. Students will then add pipecleaner antennae and googly eyes.

Take picture of each student and crop off half of his/her face. Students must then complete the face to make it symmetrical.

HSP ThinkCentral; student textbook, teacher's guide, enrichment, re-teach, problem solving and practice worksheets, on-line intervention and enrichment (MegaMath) activities, iTools

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