Mathematics Department

Grade 5

Developed By: Grade 5 Teachers

Effective Date: Fall 2020

Scope and Sequence

Month	Grade 5
September	**Grade 5 Math Baseline Assessment (by September 14)- HOLD OFF** **Chapter 1 Whole Numbers- Quickly** **Start Chapter 2**
October	**Chapter 2 Whole Number Multiplication & Division** **Focus Lesson 2.2a: Multiplying by Powers of Ten (After Lesson 2) (5.NBT.2) TEA 318A** **Focus Lesson 2.6a: Evaluating Expressions with Parentheses, Brackets and Braces (After Lesson 6) (5.OA.1) TEA 318C**
November	**Recall Prior Knowledge Chapter 3 is helpful (2 days)** **Chapter 3 Fractions & Mixed Numbers** Can Go to Grade 4 Chapter 6 (6.1 and 6.2) **Grade 5 Benchmark Assessment 1 (by November 30) (Chapters 1 through 3)**
December	**Focus Lesson 4.0 Multiplying with Whole Numbers and Proper Fractions (Before Beginning Chapter 4) (5.NF.5.a) TEA 318D** **Chapter 4 Multiplying & Dividing Fractions & Mixed Numbers** **Focus Lesson 4.6.a Dividing a Whole Number by a Unit Fraction (After Lesson 6) (5.NF.7.b) TEA 318E** **Focus Lesson 4.7.a Real-World Problems: Dividing a Whole Number by a Unit Fraction (After Lesson 7) (5.NF.7.b) TEA 318F** **Focus Lesson 6.0 Finding Area of a Rectangle with Fractional Side Lengths (Right after Chapter 4) (5.NF.4.b) TEA 318G**
January	**Recall Prior Knowledge Chapter 8 is helpful (2 days)** **Chapter 8 Decimals** **Go back to Grade 4 Chapter 7 -Rounding Lesson 7.4** **Chapter 8 Test Prep- Yes**

	Grade 5 Benchmark Assessment 2 (by January 31) (Chapters 4 and 8 as described above)
February	**Chapter 9 Multiplying & Dividing Decimals** **Focus Lesson 9.2.a Multiplying Decimals by Powers of Ten (After Lesson 2) (5.NBT.2) TEB 304A**
March	**Chapter 12**- Recall Prior Knowledge - Angles p. 157 **Chapter 13** Recall Prior Knowledge- Classifying Polygons-p. 183 **Lesson 13.5 Parallelograms, Rhombus, and Trapezoid** **Chapter 14 Three-Dimensional Figures (Quick- 2 lessons)** **Chapter 15 Volume** Then -Recall Prior Knowledge Chapter 15 is helpful. Then- 15.1 15.2 Skip 15.3 15.4- 2 days 15.5- Skip p. 290-295 or use these problems for advanced learners **Focus Lesson 15.5.a Volume of a Rectangular Prism (After Lesson 5) (5.MD.5.a) TEB 304D** **Focus Lesson 15.5.b Volume of Solid Figures (After Lesson 15.5.a) (5.MD.5.c) TEB 304E**
April	**Chapter 11 Graphs Lesson 11.1** **Focus Lesson 11.1a : Making and Interpreting Line Plots (After Lesson 1) (5.MD.2) TEB 304B** **Then do Lesson 11.2 Graphing an Equation** **Skip 11.3 and 11.4** **Converting Measurement Review (5.MD.1) (Exactly Which conversions?)** **Grade 5 Benchmark Assessment 3 (by April 12-Optional) (Chapters 9, 11, 14 and 15 as described above in addition to Converting Measurements-5.MD.1)** **Go Back to Chapter 12 Angles- Add in Measuring Angles with a Protractor (Exposure)- Grade 4 Chapter 9**
May	**Chapter 13 Properties of Triangles** Lessons 13.1 to 13.3 Skip 13.4 **Grade 5 Math Spring Summative Assessment by May 31 (will assess all Grade 5 Standards up to this point)**
June	**Chapter 7 Ratio** (In preparation for grade 6) **Chapter 10 Percents-** (In preparation for grade 6) It would be helpful if students could learn part/whole ratio model for percent problems prior to grade 6, which is when they learn the equation model.) **Chapter 5 Algebra** (In preparation for grade 6)

	Teach up to 5.3 Day 1

Unit 1

Whole Numbers

Summary and Rationale

In this unit, students represent six-digit and seven-digit numbers in word, standard, and expanded forms. They extend place-value to larger numbers as they compare and order. The concept of negative numbers is very briefly explored by using number lines and real-world situations. Students are asked to identify to identify rules for number patterns and then complete the patterns. They also estimate sums, differences, products, and quotients through several methods: rounding, using compatible numbers, and front-end estimation with adjustment.

Students learn to use the basic functions of a calculator, multiply and divide using patterns and conventional algorithms, simplify numerical expressions using order of operations, and solve real-world problems involving multiplication and division using bar models and other strategies.

Recommended Pacing

Standards

Numbers & Operations in Base Ten	
5.NBT.1	Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
5.NBT.2	Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
5.NBT.5	Fluently multiply multi-digit whole numbers using the standard algorithm.
5.NBT.6	Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.
Operations & Algebraic Thinking	
5.OA.1	Represent real world and mathematical problems by graphing points in the first quadrant of the

	coordinate plane, and interpret coordinate values of points in the context of the situation.
5.OA.2	Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Standard x.x	
Integration of Technology	

Instructional Focus

Enduring Understandings:	**Essential Questions:**
Whole numbers can be written in different ways. Numbers can be compared and rounded, according to their place value. Patterns can be used to help you multiply and divide numbers.	What is the order of operations and why is it necessary? What kind of number patterns can help when multiplying and dividing by multiples of 10?

Numeric expressions can be simplified using the order of operations. Multiplication and division can be used to solve real-world problems.	
Evidence of Learning (Assessments)	
Objectives (SLO)	
Students will know: ● Hundred, thousand ● Periods ● Million ● Place-value ● Greater than (>), less than (<) ● Front-end estimation, with adjustment ● Compatible numbers ● Product, factor ● Exponent, base ● Square, cube ● Quotient, dividend, divisor, remainder ● Numeric expression ● Order of operations	Students will be able to: ● Count by ten thousands and hundred thousands to 10,000,000. ● Read and write numbers to 10,000,000 in standard form, in word form, and in expanded form. ● Identify the place value of any digit in numbers to 10,000,000. ● Identify and complete a number pattern. ● Find a rule for a number pattern. ● Round numbers to the nearest thousand. ● Locate numbers on a number line. ● Use rounding to estimate or check sums, difference, and products. ● Used related multiplication facts to estimate quotients. ● Use a calculator to add, subtract, multiply, and divide whole numbers. ● Multiply and divide numbers by 10, 100, or 1,000 using patterns. ● Multiply and divide numbers up to 4 digits by multiples of 10, 100, or 1,000. ● Use rounding to estimate products. ● Multiply whole numbers by 10 squared or 10 cubed. ● Multiply and divide a 2, 3, or 4-digit number by a 2-digit number. ● Use rounding and related multiplication facts to estimate quotients. ● Use order of operations to simplify a numeric expression. ● Evaluate numerical expressions with parentheses, brackets, and braces. ● Use efficient strategies to solve multi-step problems involving multiplications and division.

	• Express and interpret the product or quotient appropriately.

Suggested Resources/Technology Tools

Students will know:

- Hundred, thousand
- Periods
- Million
- Place-value
- Greater than (>), less than (<)
- Front-end estimation, with adjustment
- Compatible numbers
- Product, factor
- Exponent, base
- Square, cube
- Quotient, dividend, divisor, remainder
- Numeric expression
- Order of operations

Focus Lesson 2.2a: Multiplying by Powers of Ten (After Lesson 2) (5.NBT.2) TEA 318A
Focus Lesson 2.6a: Evaluating Expressions with Parentheses, Brackets and Braces (After Lesson 6) (5.OA.1) TEA 318C

Place-value chips
Place-value charts
Number lines
Calculators
Multiplication tables
Division tables
Number cards
Symbol cards
Numerical expressions table

Math In Focus Virtual Manipulatives

www.funbrain.com/tens/index.html (Place value)
www.gamequarium.com/estimation.html (Estimation)
www.mathplayground.com/division02.html (Division with remainders)
www.kidsnumbers.com/long-division.php (Division practice games)
www.mathplayground.com/WordProblemsWithKatie2.html (Multiplication and division number stories)
www.math-play.com/Order-of-Operations-Millionaire/order-of-operations-millionaire.html (Order of operations)

Counting on Frank by Rod Clement
How Much is a Million? by David M. Schwartz
Math Talk by Theoni Pappas
Speed Mathematics by Bill Handley

A Remainder of One by Elinor J. Pinczes
One Hundred Hungry Ants by Elinor J. Pinczes

Modifications

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs. Also, see textbook for Differentiated Instruction ideas in each chapter.

Special Education - Reteach/Extra practice workbook pages, anchor charts, scaffolded explanations of topics, manipulatives, additional time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Select activities which reinforce chapter vocabulary and connections among these words such as:
A Word Wall which includes terms, definitions, and examples
Drawings and numbers to show examples of terms

Gifted and Talented - Enrichment workbook, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

Please select all standards that apply to this unit of study:

- ❏ Act as a responsible and contributing citizen and employee.
- ❏ Apply appropriate academic and technical skills.
- ❏ Attend to personal health and financial well being.
- ❏ Communicate clearly and effectively and with reason.
- ❏ Consider the environmental social and economics impacts of decisions.
- ❏ Demonstrate creativity and innovation.
- ❏ Employ valid and reliable research strategies.
- ❏ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❏ Model integrity, ethical leadership, and effective management.
- ❏ Plan education and career paths aligned to personal goals.
- ❏ Use technology to enhance productivity.
- ❏ Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: http://www.state.nj.us/education/cccs/2014/career/9.pdf

LINKS TO CAREERS:

Unit 2

Fractions & Mixed Numbers

Summary and Rationale

In this unit, students learn to add and subtract unlike fractions and mixed numbers by rewriting the fractions as like fractions using the concept of least common denominator and equivalent fractions. Fraction circles and bar models are used to illustrate the concepts. Students apply their knowledge of finding common factors and multiples to add and subtract unlike but related fractions. They are encouraged to recognize the relationships between fractions, mixed numbers, division expressions, and decimals. Learning to represent the same number in different ways is a necessary skill for the study of algebra.

Students learn how to multiply and divide whole numbers, proper fractions, improper fractions, and mixed numbers in any combinations. Using manipulatives such as fraction bars and circles or using the pictorial approach by drawing bar models are ideal ways of demonstrating the concepts.

Recommended Pacing

Standards

Numbers & Operations- 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. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*
5.NF.2	Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*
5.NF.3	Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*
5.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

5.NF.4a	Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*
5.NF.4b	Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
5.NF.5	Interpret multiplication as scaling (resizing), by:
5.NF.5a	Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
5.NF.5b	Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
5.NF.6	Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
5.NF.7	Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.[1]
5.NF.7a	Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*
5.NF.7b	Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*
5.NF.7c	Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.

K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.7	Look for and make use of structure.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Standard x.x	
Integration of Technology	

Instructional Focus

Enduring Understandings:	**Essential Questions:**
To add or subtract unlike fractions, find a common multiple of both denominators and use that as the denominator of both fractions. Unlike fractions and mixed numbers can be added and subtracted by first rewriting them with like denominators. Whole numbers, fractions, and mixed numbers can be multiplied or divided in any combination. Dividing a fraction by a whole number is equivalent to multiplying it by the reciprocal of the whole number.	What is the first step in adding or subtracting unlike fractions or mixed numbers? How do you add or subtract unlike fractions and mixed numbers? Does the order in which you multiply fractions matter? How do you divide a fraction by a whole number?

Evidence of Learning (Assessments)
Objectives (SLO)

Students will know:	Students will be able to:
● Numerator, denominator ● Equivalent fraction ● Unlike Fraction ● Multiple, least common multiple (LCM) ● Least common denominator ● Simplest form ● Benchmarks ● Fraction bar ● Division expression ● Mixed number ● Product, common factor ● Proper fraction, improper fraction ● Reciprocal ● Fractional lengths	● Find equivalent fractions. ● Add and subtract unlike fractions. ● Add and subtract two unlike fractions where one denominator is not a multiple of the other. ● Estimate sums of fractions and differences between fractions. ● Understand and apply the relationships between fractions, mixed numbers, and division expressions. ● Express fractions, division expressions, and mixed numbers as decimals. ● Add and subtract mixed numbers with or without renaming. ● Estimate sums of mixed numbers and differences between mixed numbers. ● Solve real-world problems involving fractions and mixed numbers. ● Compare the size of a product to the size of its factors. ● Multiply proper fractions. ● Multiply improper fractions by proper or improper fractions. ● Multiply a mixed number by a whole number. ● Divide a fraction by a whole number. ● Divide a whole number by a unit fraction. ● Solve real-world problems involving multiplication and division of whole numbers, proper fractions, improper fractions, and mixed numbers. ● Find the area of a rectangle with fractional side lengths by counting square unit, and by using a formula.

Suggested Resources/Technology Tools

Grade 4 Lessons 6.1 and 6.2
Math In Focus Resources Chapter 3: Adding and Subtracting Fractions and Mixed Numbers
Focus Lesson 4.0 Multiplying with Whole Numbers and Proper Fractions (Before Beginning Chapter 4) (5.NF.5.a) TEA 318D
Math In Focus Resources Chapter 4: Multiplying and Dividing Fractions and Mixed Numbers
Focus Lesson 4.6.a Dividing a Whole Number by a Unit Fraction (After Lesson 6) (5.NF.7.b) TEA 318E
Focus Lesson 4.7.a Real-World Problems: Dividing a Whole Number by a Unit Fraction (After Lesson 7) (5.NF.7.b) TEA 318F
Focus Lesson 6.0 Finding Area of a Rectangle with Fractional Side Lengths (Right after Chapter 4) (5.NF.4.b) TEA 318G

Fraction circles
Decimal models
Table of Measures
Grid paper

Math In Focus Virtual Manipulatives

www.aaamath.com/fra43ax2.htm (Comparing fractions with like denominators)
www.aaamath.com/fra43bx2.htm (Comparing fractions with unlike denominators)
www.funbrain.com/fract/index.html (Equivalent fraction game)
www.math-play.com/adding-and-subtracting-fractions-game.html (Adding and subtracting fraction game)
www.everydaymathonline.com
www.aaamath.com/fra66dx2.htm (Adding mixed numbers)
www.aaamath.com/fra66ex2.htm (Subtracting mixed numbers)
www.mathplayground.com/fractions_mult.html (Multiplying fractions)

Gator Pie by Louise Matthews
Eating Fractions by Bruce McMillian
Fourscore and 7: Investigating in American History by Betsy Franco
Tiger Math by Ann Whitehead Nagda
Jim and the Beanstalk by Jean Cushman
Fraction Action by Loreen Leedy

Modifications

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Special Education - Reteach/Extra practice workbook pages, anchor charts, scaffolded explanations of topics, manipulatives, additional time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Select activities which reinforce chapter vocabulary and connections among these words such as:
A Word Wall which includes terms, definitions, and examples
Drawings and numbers to show examples of terms

Gifted and Talented - Enrichment workbook, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

Please select all standards that apply to this unit of study:

- ❏ Act as a responsible and contributing citizen and employee.
- ❏ Apply appropriate academic and technical skills.
- ❏ Attend to personal health and financial well being.
- ❏ Communicate clearly and effectively and with reason.
- ❏ Consider the environmental social and economics impacts of decisions.
- ❏ Demonstrate creativity and innovation.
- ❏ Employ valid and reliable research strategies.

- ❏ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❏ Model integrity, ethical leadership, and effective management.
- ❏ Plan education and career paths aligned to personal goals.
- ❏ Use technology to enhance productivity.
- ❏ Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: http://www.state.nj.us/education/cccs/2014/career/9.pdf

LINKS TO CAREERS:

Unit 3

Decimals

Summary and Rationale

In this unit, students are introduced to the place value of decimals through thousandths. In the process, they learn to how to read and write decimals through thousandths, identify the relationship between fractions and decimals, compare and order decimals, and round decimals to the nearest hundredth.

Students use patterns to help them multiply and divide decimals by one-digit whole numbers. They also learn conventional algorithms for multiplying and dividing decimals by whole numbers, make reasonable estimates of decimal sums, differences, products, and quotients. Students solve problems involving decimals, including multi-step problems and problems involving measurement.

Recommended Pacing

Standards

Numbers & Operations in Base Ten	
5.NBT.3	Read, write, and compare decimals to thousandths.
5.NBT.3a	Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., $347.392 = 3 \times 100 + 4 \times 10 + 7 \times 1 + 3 \times (1/10) + 9 \times (1/100) + 2 \times (1/1000)$.
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.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.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.6	Attend to precision.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Standard x.x	
Integration of Technology	

Instructional Focus

Enduring Understandings:	**Essential Questions:**
Decimals are another way of writing fractions or mixed numbers. Thousandths can be represented with three decimal places or as fractions. Decimals can be multiplied and divided in the same way as whole numbers.	How are fractions and decimals related? How is multiplying and dividing different when working with decimals compared to when working with whole numbers?
Evidence of Learning (Assessments)	

Objectives (SLO)

Students will know:	Students will be able to:
● Thousandth ● Equivalent ● Estimate ● Divisor	● Read and write thousandths in decimal and fraction forms. ● Represent and interpret thousandths in models or in place-value charts. ● Write a fraction with denominator 1,000 as a decimal. ● Compare and order decimals to 3 decimal places. ● Round decimals to the nearest hundredth. ● Rewrite decimals as fractions and mixed numbers in simplest form. ● Multiply and divide tenths and hundredths by a one-digit whole number. ● Multiply and divide tenths and hundredths by 10, 100, and 1,000. ● Multiply and divide tenths and hundredths by multiples of 10, 100, and 1,000. ● Multiply decimals by 10 squared or 10 cubed. ● Round quotients to the nearest tenth or hundredth. ● Estimate decimal sums, differences, products, and quotients. ● Solve real-world problems involving decimals.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 8: Decimals
Math In Focus Resources Chapter 9: Multiplying and Dividing Decimals

Base-ten blocks
Place-value chips
Place-value charts
Number lines
Connecting cubes
Multiplication tables
Division tables
Tables of Measures
Measuring tape
Rulers
Bill and coin cut-outs

Math In Focus Virtual Manipulatives

www.funbrain.com/football/ (Decimal division game)

www.mrnussbaum.com/deathdeciamials.htm (Converting fractions to decimals game)
www.mathplayground.com/fractions_mult.html (Multiplying fractions)

Modifications

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs. Also, see textbook for Differentiated Instruction ideas in each chapter.

Special Education - Reteach/Extra practice workbook pages, anchor charts, scaffolded explanations of topics, manipulatives, additional time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Select activities which reinforce chapter vocabulary and connections among these words such as:
A Word Wall which includes terms, definitions, and examples
Drawings and numbers to show examples of terms

Gifted and Talented - Enrichment workbook, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

Please select all standards that apply to this unit of study:

- ❏ Act as a responsible and contributing citizen and employee.
- ❏ Apply appropriate academic and technical skills.
- ❏ Attend to personal health and financial well being.
- ❏ Communicate clearly and effectively and with reason.
- ❏ Consider the environmental social and economics impacts of decisions.
- ❏ Demonstrate creativity and innovation.
- ❏ Employ valid and reliable research strategies.
- ❏ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❏ Model integrity, ethical leadership, and effective management.
- ❏ Plan education and career paths aligned to personal goals.
- ❏ Use technology to enhance productivity.
- ❏ Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: http://www.state.nj.us/education/cccs/2014/career/9.pdf

LINKS TO CAREERS:

Unit 4

Measurement & Data

Summary and Rationale

In this unit, students are introduced to three-dimensional solid shapes such as prisms, pyramids, cylinders, spheres, and cones, and learn to recognize and identify the difference between these solid figures. Students learn the fundamental concepts and vocabulary of solid shapes, such as vertex/vertices, edges, faces, and bases. Models play an important role in the study of solids. Students see, touch, and manipulate models of solids to consolidate their understanding.

Students build solids using unit cubes, draw cubes and rectangular prisms on dot paper, and find the volumes of cubes, rectangular prisms, and liquids in rectangular containers. Students are expected to recognize area as an attribute of two-dimensional shapes and volume as an attribute of three-dimensional shapes.

There are to different contexts to understand volume- the capacity of containers, and the amount of space taken up by objects. Both of these contexts are explored in this unit. Volume is also measured using both solid and liquid measures.

Students learn to make and interpret double bar graphs as well as make a line plot to represent data. . They apply their understanding of whole numbers, fractions, and decimals as they construct and analyze double bar graphs and line plots.

Recommended Pacing

Standards

Measurement & Data	
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.
5.MD.2	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*
5.MD.3	Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
5.MD.3a	A cube with side length 1 unit, called a “unit cube,” is said to have “one cubic unit” of volume, and can be used to measure volume.
5.MD.3b	A solid figure which can be packed without gaps or overlaps using *n* unit cubes is said to have a volume of *n* cubic units.
5.MD.4	Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
5.MD.5	Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.

5.MD.5a	Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
5.MD.5b	Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.
5.MD.5c	Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.4	Model with mathematics.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Standard x.x	
Integration of Technology	

Instructional Focus

Enduring Understandings:	**Essential Questions:**
Solid figures can be identified and classified by the number of faces, edges, and vertices.	How is the volume of any prism calculated? How is volume different from surface area?

The volume of cubes and rectangular prisms can be expressed and the number of cubic units they contain. Area is as an attribute of two-dimensional shapes and volume is as an attribute of three-dimensional shapes. Volume is the capacity of containers, and is also the amount of space taken up by objects. Volume is also measured using both solid and liquid measures. Displaying data in a graph or line plot highlights some features of the data. In a double bar graph, each item on the horizontal axis is represented by two bars, one for each set of data. The horizontal axis of a line plot can contain fractional intervals.	When is volume calculated in daily life? How is a double bar graph useful in displaying and analyzing data? How is a line plot useful in displaying and analyzing data?
Evidence of Learning (Assessments)	
Objectives (SLO)	
Students will know: ● Face, base, edge, vertex ● Rectangular Prism ● Triangular prism ● Pyramid ● Square pyramid, triangular pyramid ● Net ● Cylinder ● Sphere ● Cone ● Right triangle ● Cube ● Unit cube ● Volume ● Capacity ● Volume formula ● Double bar graph	Students will be able to: ● Identify and classify prisms and pyramids. ● Identify the solid figure that can be formed from a net. ● Identify and classify cylinders, spheres, and cones. ● Identify rectangular prisms. ● Build solids using unit cubes. ● Determine the number of unit cubes in an irregular solid. ● Draw a cube and a rectangular prism on dot paper. ● Complete a partially drawn cube and rectangular prism on dot paper. ● Find the volumes of cubes and rectangular prisms. ● Find the volume of a solid constructed by unit cubes. ● Compare volumes of cubes, rectangular prisms, and other objects. ● Use a formula to find the volume of a rectangular prism.

• Key • Line plot	• Find the capacity of a rectangular container. • Find the volume of a figure composed of two rectangular prisms. • Solve word problems involving volumes of rectangular prisms, liquids, and of figures composed of two rectangular prisms. • Make and interpret a double bar graph. • Make a line plot to represent data given in fractions of a unit. • Use operations on fractions to solve problems on the information presented.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 14:Three-Dimensional Shapes
Math In Focus Resources Chapter 15: Volume of Cube and Rectangular Prism- See Notes in Scope & Sequence
Focus Lesson 15.5.a Volume of a Rectangular Prism (After Lesson 5) (5.MD.5.a) TEB 304D
Focus Lesson 15.5.b Volume of Solid Figures (After Lesson 15.5.a) (5.MD.5.c) TEB 304E
Math In Focus Resources Chapter 11 Graphs Lesson 11.1 ONLY
Focus Lesson 11.1a

Solid shapes
Number cubes
Net of solid shapes
Connecting cubes
Dot paper
Containers

Math In Focus Virtual Manipulatives

www.mathsisfun.com/geometry/prisms.html (Volume of right prisms –Notes and practice)
www.mrnussbaum.com/coolgraphing.htm (Several graphs to practice organizing data)

Room for Ripley by Stuart J. Murphy
G is for Googoi by David M. Schwartz

Modifications

*These are only suggested ideas to modify instruction, modifications and accommodations should be tailored to each student's IEP and needs. Also, see textbook for Differentiated Instruction ideas in each chapter.

Special Education - Reteach/Extra practice workbook pages, anchor charts, scaffolded explanations of topics, manipulatives, additional time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

504 - Reteach/Extra practice pages, anchor charts, scaffolded explanations of topics, manipulatives, extra time for work, group work, visual aids, modeling, hands-on learning activities, small group work for more individualized attention

ELL - Select activities which reinforce chapter vocabulary and connections among these words such as:
A Word Wall which includes terms, definitions, and examples
Drawings and numbers to show examples of terms

Gifted and Talented - Enrichment workbook, Put on Your Thinking Cap pages and resources, higher-level questions, challenge packets, KenKen and other puzzles, leading group work

Please select all standards that apply to this unit of study:

- ❑ Act as a responsible and contributing citizen and employee.
- ❑ Apply appropriate academic and technical skills.
- ❑ Attend to personal health and financial well being.
- ❑ Communicate clearly and effectively and with reason.
- ❑ Consider the environmental social and economics impacts of decisions.
- ❑ Demonstrate creativity and innovation.
- ❑ Employ valid and reliable research strategies.
- ❑ Utilize critical thinking to make sense of problems and persevere in solving them.
- ❑ Model integrity, ethical leadership, and effective management.
- ❑ Plan education and career paths aligned to personal goals.
- ❑ Use technology to enhance productivity.
- ❑ Work productively in teams while using cultural global competence.

Suggestions on integrating these standards can be found at: http://www.state.nj.us/education/cccs/2014/career/9.pdf

LINKS TO CAREERS:

Unit 5

Geometry

Summary and Rationale

In this unit, students learn to graph linear equations on coordinate grids. They learn to read and plot points on a coordinate grid, and to graph an equation that represents a functional relationship between two quantities.

Students are introduced to properties of angles on a line, angles at a point, and vertical angles. Students verify thee properties through hands-on activities and then apply them to finding unknown angle measures without the use of a protractor.

Students learn the properties of triangles and four-sided figures. They learn to identify special triangles such as right, isosceles, and equilateral triangles, categorized by angle measures and/or side lengths. Students learn and apply the Triangle Sum Property to solve problems. Students also extend their knowledge of the properties of four-sided figures to parallelogram, rhombus, and trapezoid.

Recommended Pacing

Standards

Geometry	
5.G.1	Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., *x*-axis and *x*-coordinate, *y*-axis and *y*-coordinate).
5.G.2	Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.
5.G.3	Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
5.G.4	Classify two-dimensional figures in a hierarchy based on properties.
Mathematical Practices	
K-12.MP.1	Make sense of problems and persevere in solving them.
K-12.MP.2	Reason abstractly and quantitatively.
K-12.MP.3	Construct viable arguments and critique the reasoning of others.
K-12.MP.5	Use appropriate tools strategically.
K-12.MP.6	Attend to precision.
K-12.MP.8	Look for and express regularity in repeated reasoning.
Interdisciplinary Connections	
Standard x.x	

Integration of Technology	

Instructional Focus

Enduring Understandings:	**Essential Questions:**
The graph of an equation on a coordinate grid often represents a functional relationship between two quantities. Properties of geometric figures state relationships among angles or sides of the figures. Triangles and four-sided figures have their own special properties. The sum of angle measures on a line is 180°. The sum of angle measures at a point is 360°. Vertical angles have equal measures. Triangles can be classified by their side lengths and by their angle measures. Triangle Sum Property: The sum of the angle measures of a triangle is 180°. A scalene triangle is a triangle with no equal angles or sides. An isosceles triangle is a triangle with two equal sides (legs) and two equal angles (base angles). An equilateral triangle is a triangle with three equal sides and three equal angles. A parallelogram is a four-sided figure (a quadrilateral) with two pairs of opposite sides that are parallel and equal. Opposite angles of a parallelogram are equal. A rectangle is a parallelogram with four right angles. A rhombus is a parallelogram with four equal sides. A square is a parallelogram with four right angles and four equal sides.	In what ways can triangles be classified? In what ways can quadrilaterals be classified? Why isn't a trapezoid classified as a parallelogram?

A trapezoid is a four-sided figure (a quadrilateral) with one pair of opposite sides. (Therefore, a trapezoid is not a parallelogram.	

Evidence of Learning (Assessments)

Objectives (SLO)

Students will know:	Students will be able to:
● Coordinate grid, coordinate plane ● X-axis, y-axis ● Ordered pair ● X-coordinate, y-coordinate ● Origin ● Straight line graph ● Equation ● Angles on a line ● Angles at a point ● Intersecting lines ● Vertical angles ● Equilateral triangle ● Isosceles triangle ● Scalene triangle ● Right triangle ● Acute triangle ● Obtuse triangle ● Parallelogram ● Rhombus ● Trapezoid	● Read and plot points on a coordinate grid. ● Graph an equation. ● Understand and apply the property that the sum of the angle measures on a line is 180°. ● Understand and apply the property that the sum of the angle measures at a point is 360°. ● Understand and apply the property that vertical angles have equal measures. ● Classify triangles by the lengths of their side lengths and angle measures. ● Understand and apply the property that the sum of the angle measures of a triangle is 180°. ● Understand and apply the properties of right, isosceles, and equilateral triangles. ● Understand and apply the properties of parallelograms, rhombuses, and trapezoids.

Suggested Resources/Technology Tools

Math In Focus Resources Chapter 11 Graphs (11.2) Only- Graphing an Equation
Math In Focus Resources Chapter 13: Properties of Triangles and Four-Sided Figures (All Lessons Except 13.4)

www.mathplayground.com/locate_aliens.html (Coordinates)
www.mrnussbaum.com/stockshelves.htm (Coordinates)
www.gamequarium.com/data.html (Rules, tables, and graphs)

Math In Focus Virtual Manipulatives

Graphs

Rulers
Coordinate grids
Grid paper
Protractors
Inch and centimeter rulers
Tracing paper
Drawing triangles
Shape cut-outs

Modifications

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