MOUNT HOLLY TOWNSHIP SCHOOL DISTRICT
FIFTH GRADE MATHEMATICS CURRICULUM

2016 Mathematics Standards with companion June 2020 NJSLS
Board Approval: September 28, 2022

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Board Approved: September 28, 2022

New Jersey Mathematics Standards:
2016 New Jersey Student Learning Standards - Mathematics

New Jersey Computer Science and Design Thinking Standards
2020 New Jersey Student Learning Standards: Computer Science and Design Thinking

New Jersey Career Readiness, Life Literacies, and Key Skills Standards
2020 New Jersey Student Learning Standards: Career Readiness, Life Literacies & Key Skills

Grade Five Pacing Guide

Mathematics Curriculum	**Grade 5**

Interdisciplinary Connections: The Mathematics Program, My Math/Glencoe Math, links mathematics instruction across multiple disciplines. These interdisciplinary lessons are incorporated into each grade level, providing purposeful application and meaningful learning.

Math Discipline	*Connection to other Disciplines*
Domain 1: NBT. Numbers and Operations in Base Ten	NJSLSA.R3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally.

	NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
Domain 2: OA. Operational and Algebraic Thinking	NJSLSA.R3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
Domain 3: NF. Fractions	NJSLSA.R3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.
Domain 4: MD. Measurement and Data	NJSLSA.R3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and

	relevant and sufficient evidence. NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations. 5-PS1-2. Measure and graph quantities to provide evidence that regardless of the type of change that occurs when heating, cooling, or mixing substances, the total weight of matter is conserved. 5-ESS1-2. Represent data in graphical displays to reveal patterns of daily changes in length and direction of shadows, day and night, and the seasonal appearance of some stars in the night sky. 5-ESS2-2. Describe and graph the amounts of salt water and fresh water in various reservoirs to provide evidence about the distribution of water on Earth.
Domain 5: G. Geometry	NJSLSA.R3. Analyze how and why individuals, events, and ideas develop and interact over the course of a text. NJSLSA.R7. Integrate and evaluate content presented in diverse media and formats, including visually and quantitatively, as well as in words. NJSLSA.W1. Write arguments to support claims in an analysis of substantive topics or texts, using valid reasoning and relevant and sufficient evidence. NJSLSA.SL1. Prepare for and participate effectively in a range of conversations and collaborations with diverse partners, building on others' ideas and expressing their own clearly and persuasively. NJSLSA.SL2. Integrate and evaluate information presented in diverse media and formats, including visually, quantitatively, and orally. NJSLSA.SL5. Make strategic use of digital media and visual displays of data to express information and enhance understanding of presentations.

Computer Science and Design Thinking	
Core Ideas	**Performance Expectations**
Data can be organized, displayed, and presented to highlight relationships.	8.1.5.DA.1: Collect, organize, and display data in order to highlight relationships or support a claim.
Individuals can select, organize, and transform data into different visual representations and communicate insights gained from the data.	• 8.1.5.DA.3: Organize and present collected data visually to communicate insights gained from different views of the data. • 8.1.5.DA.4: Organize and present climate change data visually to highlight relationships or support a claim
Different algorithms can achieve the same result. Some algorithms are more appropriate for a specific use than others.	8.1.5.AP.1: Compare and refine multiple algorithms for the same task and determine which is the most appropriate.
Career Readiness, Life Literacies, and Key Skills	
Financial Institutions/Psychology	
Core Ideas	**Performance Expectations**
People can choose to save money in many places such as home in a piggy bank, bank, or credit union.	9.1.5.FI.1: Identify various types of financial institutions and the services they offer including banks, credit unions, and credit card companies.
An individual's financial traits and habits affect his/her finances.	9.1.5.FP.1: Illustrate the impact of financial traits on financial decisions. 9.1.5.FP.2: Identify the elements of being a good steward of money

Spending choices and their intended and unintended consequences impact financial outcomes and personal wellbeing.	9.1.5.FP.3: Analyze how spending choices and decision-making can result in positive or negative consequences. 9.1.5.FP.4: Explain the role of spending money and how it affects wellbeing and happiness (e.g., "happy money," experiences over things, donating to causes, anticipation, etc.)
Planning and Budgeting	
There are specific steps associated with creating a budget.	9.1.5.PB.1: Develop a personal budget and explain how it reflects spending, saving, and charitable contributions.
Saving money can impact an individual's ability to address emergencies and accomplish their short-and long-term goals.	9.1.5.PB.2: Describe choices consumers have with money (e.g., save, spend, donate).
Career Awareness, Exploration, Preparation, and Training	
An individual's passions, aptitude and skills can affect his/her employment and earning potential	9.2.5.CAP.1: Evaluate personal likes and dislikes and identify careers that might be suited to personal likes. 9.2.5.CAP.2: Identify how you might like to earn an income. 9.2.5.CAP.3: Identify qualifications needed to pursue traditional and non-traditional careers and occupations. 9.2.5.CAP.4: Explain the reasons why some jobs and careers require specific training, skills, and certification (e.g., life guards, child care, medicine, education) and examples of these requirements
There are a variety of factors to consider before starting a business	9.2.5.CAP.6: Compare the characteristics of a successful entrepreneur with the traits of successful employees. • 9.2.5.CAP.7: Identify factors to consider before starting a business.
Diversity, Equity, and Inclusion:	
Culturally Responsive Practices in Mathematics Education:	

8 Powerful Ways to Promote Equity in the Classroom **Who Do You Call On? Rooting Out Implicit Bias'** **Why Representation Matters**	
Oral History Project: Students in Grade 5 will complete an Oral History Project that interviews a subject of their choice. Students conduct interviews and record personal experiences focused on choosing a career path based on personal likes, dislikes, strengths, weaknesses. They then synthesize and present the information as a an article, pamphlet, poster or other medium of their choice.	Resources: Learning for Justice: Oral History Project

Domain 1: Number and Operations in Base Ten	
Chapter 1: Place Value (13 days) Chapter 2: Multiply Whole Numbers (12 days) Chapter 3: Divide by a One-Digit Divisor (17 days) Chapter 4: Divide by a Two-Digit Divisor (9 days) Chapter 5: Add and Subtract Decimals (12 days) Chapter 6: Multiply and Divide Decimals (18 days)	
NJ 2016 Student Learning Standards: Mathematics Grade 5 **Number & Operations in Base Ten** **5.NBT.A. Understand the place value system.**	**NJDOE Mathematics Curricular Framework** Guide Document and Supports Mathematics Curricular Framework

5.NBT.A.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.A.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.A.3. Read, write, and compare decimals to thousandths. 5.NBT.A.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.A.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.A.4. Use place value understanding to round decimals to any place. **5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.** 5.NBT.B.5. Fluently multiply multi-digit whole numbers using the standard algorithm.	**Mathematical Practices** **MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.** **highlight appropriate indicators for unit/domain** MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.

5.NBT.B.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. 5.NBT.B.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.	
Career Readiness, Life Literacies, and Key Skills Integration **NJSLS - CRLLKS 2020** **highlight appropriate indicators for unit/domain** CRLLKS1. Act as a responsible and contributing community members and employee. CRLLKS2. Attend to financial well-being. CRLLKS3. Consider the environmental, social and economic impacts of decisions. CRLLKS4. Demonstrate creativity and innovation. CRLLKS5. Utilize critical thinking to make sense of problems and persevere in solving them CRLLKS6. Model integrity, ethical leadership and effective management. CRLLKS7. Plan education and career paths aligned to personal goals. CRLLKS8. Use technology to enhance productivity increase	**21st Century Student Outcomes** http://www.battelleforkids.org/networks/p21 **Learning and Innovation Skills** **highlight appropriate indicators for unit/domain** Think Creatively Work Creatively with Others Implement Innovations Reason effectively Use Systems Thinking Make Judgments and Decisions Solve Problems Communicate Clearly Collaborate with Others **Life and Career Skills** **highlight appropriate indicators for unit/domain** Adapt to Change Be Flexible

collaboration and communicate effectively.persevere in solving them. CRLLKS9. Work productively in teams while using cultural/global competence.	Manage Goals and Time Work Independently Be Self-directed Learners Interact Effectively with Others Work Effectively in Diverse Teams
Enduring Understandings ● The position of a digit in a number affects the value of the number. ● Numbers can be expressed in a variety of ways. ● Operations with numbers can be performed by standard or algorithms. ● Numbers enable us to use place value of digits to comprehend quantities, sequences and estimation. ● Multiplication is repeated addition, related to division, and can be used to solve problems. ● The standard multiplication algorithm breaks the calculation into simpler calculations using place value starting with the ones, then the tens, and so on. ● Some numbers can be represented using a base number and an exponent. ● Multiplication and division are inverse operations. ● The standard long division algorithm breaks the process into smaller calculations based on place value. ● Estimate quotients using rounding and compatible numbers. ● Interpreting the remainder/fraction of a division problem depends on the application(round up, round down-truncate, or exact answer)	**Essential Questions** ● How do you read and write whole numbers through the millions? ● How do you compare and order numbers from the millions to the millionths place? ● How is expanded form related to place value? ● How does the position of a digit affect its value? ● How do you make a reasonable estimate? ● How do I decide what strategy will work best in a given problem situation? ● How do you use the standard algorithm to multiply whole numbers? ● How can estimation be helpful when multiplying whole numbers? ● How can you use exponents to represent an equivalent value? ● What does division mean? ● When and how do we use rounding? ● How is multiplication related to division? ● How is place value important to the division algorithm? ● How do I decide what strategy will work best in a given problem situation?

• Use standard division algorithm to solve problems.	
Content Knowledge 1. Values of each digit in a number. 2. Comparing and ordering numbers. 3. Reading and writing decimals in various notations. 4. Addition of whole numbers using the standard algorithm. 5. Subtraction of whole numbers using the standard algorithm. 6. Addition of decimals using the standard algorithm. 7. Subtraction of decimals using the standard algorithm. 8. Rounding of decimals and whole numbers to specified place values. 9. The Commutative, Associative, Distributive Identity and Zero Properties of Multiplication can be used to solve problems. 10. Place-value patterns and the properties of multiplication can be used to mentally compute products of whole numbers. 11. Rounding or compatible numbers can be used to estimate products of whole numbers. 12. The traditional algorithm can be used to multiply multi-digit numbers by a one-digit number, two- digit or multi-digit numbers. 13. Exponential notation can be used to show repeated multiplication. 14. Whole # quotients w/ up to 4-digit dividends and 2-digit divisors can be found using strategies based on place value, properties of operations, and the relationship between multiplication and division.	**Skills** 1. Find the value of each digit in a number from the billions to the millionths place. 2. Read a decimal numbers in numerical form, number name form and expanded notation. 3. Write a decimal number in numerical form, number name form and expanded notation. 4. Compare and order numbers from the billions to the millionths place. 5. Compute sums and differences of two large whole numbers. 6. Compute sums of decimals involving tenths, hundredths, and thousandths. 7. Compute differences of decimals involving tenths, hundredths, and thousandths. 8. Apply computation of whole numbers and decimals. 9. Compute the product of two multi-digit factors using the standard multiplication algorithm. 10. Estimate a product using rounding and compatible numbers. 11. Represent a value using exponential notation. 12. Divide mentally by rounding or using compatible numbers. 13. Estimate quotients using compatible numbers or rounding. 14. Divide with one digit divisors and two digit divisors. 15. Interpret and solve word problems involving division. 16. Apply division to solve real world problems.

15. Rounding and compatible numbers can be used to find quotients mentally. 16. Long division can be used to divide with one digit divisors and two digit divisors. 17. There are different key words to indicate when to multiply or divide. 18. The meaning of remainders need to be interpreted when answering division word problems.	

Primary and Supplementary Resources

My Math Grade 5 Student book
My Math Grade 5 Volume 1 Teacher's Edition

My Math Resources

EdConnect Login

NJSLA Mathematics Operational Evidence Statements
https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491

NJSLA Released Items
https://nj.digitalitemlibrary.com/home
https://resources.newmeridiancorp.org/

Illustrative Mathematics

iReady
i-Ready makes differentiated instruction a practical reality for teachers and students. *i-Ready*:

- integrates powerful assessments and rich insights with effective and engaging instruction in reading and mathematics to address students' individual needs.
- empowers teachers every day to make more informed instructional decisions.
- motivates students with access to their own personalized path to growth.

XtraMath

- This program helps students practice their math facts for addition, subtraction, multiplication, and addition.
- Can individualize the fluency skills for each student.
- Can run reports to determine progress.

Scholastic Study Jams

- Fun videos which explain common mathematics concepts.
- Questions at the end of the video reinforce the concepts.

Khan Academy

- a set of online tools that help educate students. The organization produces short lessons in the form of YouTube videos.
- Its website also includes supplementary practice exercises and materials for educators.

5th grade Flip Book:
https://drive.google.com/file/d/1e5gDnsPow3IqskmyM1LEjm1PDVxc7mm_/view?usp=sharing

101 Math Discourse Questions:
http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf

Asking Effective Questions
http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf

Fluency Support for Grades 3-5
https://jenniferfindley.com/free-math-intervention-activities-grades-3-5/

Achieve the Core Coherence Map
https://achievethecore.org/coherence-map/5

Chapter 1: Place Value
Chapter 1 Project: Map It!
Vocabulary: period, standard form, expanded form, place, place value, place-value chart
Lesson 1-Place Value Through the Millions
Lesson 2-Compare and Order Whole Numbers through Millions
Vocabulary: is greater than, is less than, is equal to
Lesson 3-Model Fractions and Decimals
Vocabulary: decimal, decimal point
Lesson 4-Represent Decimals
Vocabulary: decimal
Lesson 5-Understand Place Value
Lesson 6-Place Value Through the Thousandths
Vocabulary: hundreds, hundredths, ones, place value, tens, tenths, thousands, thousandths
Lesson 7-Compare Decimals
Vocabulary: equivalent decimals
Lesson 8-Order Whole Numbers and Decimals
Vocabulary: decimal
Lesson 9-Problem Solving Investigation

Chapter 2:
Lesson 1-Prime Factorization
Vocabulary: prime factorization
Lesson 2: Hands-On: Prime Factorization Patterns
Lesson 3: Powers and Exponents
Vocabulary: exponent, base, power, squared, cubed
Lesson 4: Multiplication Patterns
Vocabulary: Powers of 10
Lesson 5: Problem-Solving Investigation
Lesson 6: Hands On: Use Partial Products and the Distributive Property
Lesson 7: The Distributive Property
Vocabulary: Distributive Property
Lesson 8: Estimate Products
Vocabulary: Compatible numbers

Chapter 2 Project: About How Much? (Use after Lesson 8)
Lesson 9: Multiply by One-Digit Numbers
Lesson 10: Multiply by Two-Digit Numbers

Chapter 3: Divide by a One-Digit Divisor
Lesson 1: Relate Division to Multiplication
Vocabulary: fact family, unknown, variable
Lesson 2: Hands On-Division Models
Lesson 3: Two-Digit Dividends
Vocabulary: dividend, divisor, quotient, remainder
Lesson 4: Division Patterns
Lesson 5: Estimate Quotients
Lesson 6: Hands On: Division Models with Greater Numbers
Lesson 7: Hands On: Distributive Property and Partial Quotients
Vocabulary: Partial Quotients
Lesson 8: Divide Three- and Four-Digit Dividends
Lesson 9: Place the First Digit
Lesson 10: Quotients with Zeros
Lesson 11: Hands On: Use Models to Interpret the Remainder
Lesson 12: Interpret the Remainder
Lesson 13: Problem-Solving Investigation: Determine Extra or Missing Information
Chapter 3 Project: Real-World Division

Chapter 4: Divide by a Two-Digit Divisor
Lesson 1: Estimate Quotients
Lesson 2: Hands-On: Divide Using Base-Ten Blocks
Lesson 3: Divide by a Two-Digit Divisor
Lesson 4: Adjust Quotients
Lesson 5: Divide Greater Numbers
Chapter 4 Project: Plan a Field Trip!
Lesson 6: Problem-Solving Investigation: Solve a Simpler Problem

Chapter 5: Add and Subtract Decimals

Lesson 1: Round Decimals
Lesson 2: Estimate Sums and Differences
Lesson 3: Problem-Solving Investigation: Estimate or Exact Answer
Lesson 4: Hands On: Add Decimals Using Base-Ten Blocks
Lesson 5: Hands On: Add Decimals Using Models
Lesson 6: Add Decimals
Chapter 5 Project: Food Drive
Lesson 7: Addition Properties
Vocabulary: Commutative Property of Addition, Associative Property of Addition, Identity Property of Addition
Lesson 8: Hands On: Subtract Decimals Using Base-Ten Blocks
Lesson 9: Hands On: Subtract Decimals Using Models
Lesson 10: Subtract Decimals

Chapter 6: Multiply and Divide Decimals
Lesson 1: Estimate products of Whole Numbers and Decimals
Lesson 2: Hands On: Use Models to Multiply
Lesson 3: Multiply Decimals by Whole Numbers
Lesson 4: Hands On: Use Models to Multiply Decimals
Lesson 5: Multiply Decimals
Lesson 6: Multiply Decimals by Powers of Ten
Lesson 7: Problem-Solving Investigation: Look for a Pattern
Lesson 8: Multiplication Properties
Vocabulary: Associative Property of Multiplication, Commutative Property of Multiplication, Identity Property of Multiplication
Lesson 9: Estimate Quotients
Lesson 10: Hands On: Divide Decimals
Chapter 6 Project: Tree House
Lesson 11: Divide Decimals by Whole Numbers
Lesson 12: Hands On: Use Models to Divide Decimals
Lesson 13: Divide Decimals
Lesson 14: Divide Decimals by Powers of Ten

Assessments:
Beginning of the Year Benchmark Assessment found in ConnectEd or by clicking this link

Chapter 1:

1. Diagnostic Assessment: Am I Ready? completed in SE p. 3 or printed from *Assessment Masters* pp 7-9. A ready-made diagnostic test is available online.
2. Check My Progress SE p. 35 (after Lesson 4) or *Assessment Masters* pg 12. A bank of questions is available in the Assessment tab in ConnectED.
3. Ch. 1 Summative Assessment completed in ConnectED or printed from *Assessment Masters* pg 14-27
4. Ch. 1 Project

Chapter 2:

1. Diagnostic Assessment: Am I Ready? Completed in SE p. 73 or printed from *Assessment Masters* pp. 32-34. A ready-made diagnostic test is available online.
2. Check My Progress (after Lesson 5) SE p. 111 or *Assessment Masters* pp. 37. A bank of questions is available in the Assessment tab in ConnectED.
3. Ch. 2 Summative Assessment completed in ConnectED or printed from *Assessment Masters* pp. 39-42.
4. Chapter 2 Project

Chapter 3:

1. Diagnostic Assessment: Am I Ready? Completed in SE pp. 151 or printed from *Assessment Masters* pp. 57-59. A ready-made diagnostic test is available online.
2. Check My Progress SE pp. 181-182 (after Lesson 4), use *Assessment Masters*, p. 62. A bank of questions is available in the Assessment tab in ConnectED.
3. Check My Progress SE pp. 207-208 (after Lesson 8), use *Assessment Masters*, p. 63. A bank of questions is available in the Assessment tab in ConnectED.
4. Ch. 3 Summative Assessment completed in ConnectED or printed from *Assessment Masters* pp. 65-78.
5. Chapter 3 Project

Chapter 1-3 Benchmark **found in ConnectEd or by clicking this link**

Chapter 4:

1. Diagnostic Assessment: Am I Ready? Completed in SE pp. 245 or printed from *Assessment Masters* pp. 83-85. A ready-made diagnostic test is available online.
2. Check My Progress SE pp. 269-270 (after Lesson 3), use *Assessment Masters,* p. 88. A bank of questions is available in the Assessment tab in ConnectED.
3. Ch. 4 Summative Assessment completed in ConnectED or printed from *Assessment Masters* pp. 90-103.

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4. Chapter 4 Project

Differentiation in the Mathematics Classroom

Differentiate the Test

- Use alternative leveled chapter assessments (approaching level, on level and beyond level) to differentiate assessment for specific needs of students
- Provide option of print vs. online assessment
- Reduce the number of problems given
- Provide multiplication charts/calculators
- Provide hints written on tests, such as mnemonic devices
- Give extra time
- Provide a checklist of the steps needed to complete the problem
- Provide place value charts and resources
- Provide lots of white-space to make it less busy
- If still struggling, reteach & retest

Differentiation - Best Practices

➢ Use the Am I Read? Worksheets to review concepts students missed on the assessment.
➢ To reassess, use the chapter Diagnostic Test in the Assessment Masters book.
➢ Have students correct the items they missed and explain what their original error was.

- Have students complete the Chapter Pre-test to determine what skills in the chapter students already know.
- Provide multiplication tables (or calculators) to students who struggle with fluency. This allows you to see if they've mastered the skill at hand (i.e., adding/subtracting fractions) without the barrier of fact fluency issues. Click here for a copy of a multiplication chart.
- Use graphic organizers to teach multi-digit multiplication. Click here for an example of a multiplication graphic organizer.
- Use graphic organizers to teach long division. Click here for an example of a division graphic organizer.
- Use mnemonic devices to teach long division. Click here and here for two helpful mnemonic devices.
- Represent numbers in place value charts whenever possible. Give students their own laminated copies of place value charts so they can organize their thoughts while completing their work.
- Emphasize the role of diagramming in interpreting and solving problems in mathematics.
- Provide students with graph paper to help them organize their math in an effort to reduce errors being made due to handwriting.
- Use tasks that provide multiple entry points and provide scaffolds that support student participation.
- Have a vocabulary wall. Click here for access to printable vocabulary cards for your word wall.
- Provide reduced amount of homework for struggling learners. Give them 2 relevant math problems rather than an entire worksheet.
- Conference with the students often to learn about how they think about math.

Special Education Students

- Use the Am I Ready? Worksheets to review concepts students missed on the assessment.
- To reassess, use the chapter Diagnostic Test in the *Assessment Masters* book.
- Establish and teach rules and routines.
- Provide only one instruction at a time.
- Have students restate the instructions back in their own words.
- List instructions on the wall or board.
- Allow students to review and practice frequently.
- Encourage the use of eTools and virtual manipulatives.
- Allow additional time for students to complete work.

English Language Learners

- Review glossary definitions for key vocabulary words in both English and Spanish.
- Be sure that students are correctly pronouncing key vocabulary words at the start of the lesson.
- Keep a classroom cognate chart and add to it when possible.
- For non-Spanish speaking ELLs, refer to the Multilingual eGlossary for interactive definitions in 13 languages.
- Provide sentence frames to assist with student response.
- Point to key words during instruction to assist in making connections and aiding comprehension.
- Enunciate the endings of words to help ELLs distinguish subtle differences (i.e. tens and tenths).

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Encourage students to verbalize what they are doing by using words, pictures, manipulatives, and numbers.
Allow students more time to explain and justify their thinking process.
Build in time for repetition and practice.
Provide opportunities for students to explain the concepts to others.
Represent abstract concepts in a variety of ways such as words, symbols, drawings, movement, and acting out.
Create heterogeneous groups so students can learn from and model their peers' behaviors.
Reduce the number of problems given
Provide multiplication charts/calculators
Provide hints written on tests, such as mnemonic devices (i.e. PEMDAS)
Give extra time
Provide a checklist of the steps needed to complete the problem
Provide place value charts
Provide lots of white-space to make it less busy
If still struggling, reteach & retest

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During lessons, structure questions so students of different English proficiencies can answer in ways suitable to their level of understanding. For example, when comparing place values in two different numbers, you may ask, "Is eight greater than or less than 2?" Emerging students can answer with the short phrase "greater than." For expanding student, provide a sentence frame so they can answer in a complete sentence, such as _____ is greater than/less than _____. Encourage bridging students to provide more complex answers. For example, the student may explain what conclusion can be made from the comparison. "Eight is greater than two, so I know 9,085,216 is greater than 9,022,673.
Use manipulatives where appropriate. For example, counters, pretend money, unifix cubes, etc. These assist in making the transition from concrete to representational to abstract.

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At-Risk Students

Reduce the number of problems given
Provide calculators
Give extra time

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504 Students

Provide a checklist of the steps needed to complete the problem
Provide place value charts
Provide lots of white-space to make it less busy
If still struggling, reteach and retest

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Gifted and Talented Students

Have students complete the Chapter Pre-test to determine what skills in the chapter they already know.

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- When differentiating the classroom for gifted students, one should concentrate on five areas for differentiation: modifying content, allowing for student preferences, altering the pace of instruction, creating a flexible classroom environment, and using specific instructional strategies.
- The goal for gifted students is to increase critical thinking, problem-solving abilities, and creativity.
- Pose open-ended questions that require higher-level thinking.
- Model thinking strategies, such as decision-making and evaluation.
- Accept ideas and suggestions from students and expand on them.
- Facilitate original and independent problems and solutions.
- Help students identify rules, principles, and relationships.
- Take time to explain the nature of errors.
- Present students with paradoxes to analyze and test.
- Use analogies to introduce new concepts; ask students to create their own.

Domain 2: Operations and Algebraic Thinking	
Chapter 7: Expressions and Patterns (12 days)	
NJ 2016 Student Learning Standards: Mathematics Grade 5 **Operations & Algebraic Thinking** 5.OA.A. Write and interpret numerical expressions. 5.OA.A.1. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. 5.OA.A.2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. 5.OA.A.3. Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. **Number & Operations in Base Ten** **5.NBT.B. Perform operations with multi-digit whole numbers and with decimals to hundredths.** 5.NBT.7. Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties or operations, and/or the	**NJDOE Mathematics Curricular Framework** Guide Document and Supports Mathematics Curricular Framework **Mathematical Practices** **MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.** **highlight appropriate indicators for unit/domain** MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.

relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. **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 coordinates. Understand that the first number indicates how far to travel 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. 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.	
Career Readiness, Life Literacies, and Key Skills Integration **NJSLS - CRLLKS 2020** **highlight appropriate indicators for unit/domain** CRLLKS1. Act as a responsible and contributing community members and employee. CRLLKS2. Attend to financial well-being. CRLLKS3. Consider the environmental, social and economic impacts of decisions. CRLLKS4. Demonstrate creativity and innovation.	**21st Century Student Outcomes** http://www.battelleforkids.org/networks/p21 **Learning and Innovation Skills** **highlight appropriate indicators for unit/domain** Think Creatively Work Creatively with Others Implement Innovations Reason effectively Use Systems Thinking Make Judgments and Decisions Solve Problems

CRLLKS5. Utilize critical thinking to make sense of problems and persevere in solving them CRLLKS6. Model integrity, ethical leadership and effective management. CRLLKS7. Plan education and career paths aligned to personal goals. CRLLKS8. Use technology to enhance productivity increase collaboration and communicate effectively.persevere in solving them. CRLLKS9. Work productively in teams while using cultural/global competence.	Communicate Clearly Collaborate with Others **Life and Career Skills** **highlight appropriate indicators for unit/domain** Adapt to Change Be Flexible Manage Goals and Time Work Independently Be Self-directed Learners Interact Effectively with Others Work Effectively in Diverse Teams
Enduring Understandings ● Multiplication is repeated addition, related to division, and can be used to solve problems. ● The standard multiplication algorithm breaks the calculation into simpler calculations using place value starting with the ones, then the tens, and so on. ● Some numbers can be represented using a base number and an exponent. ● Different graphs can be incorporated to best show information gathered.	**Essential Questions** ● How do you use the standard algorithm to multiply whole numbers? ● How can estimation be helpful when multiplying whole numbers? ● How can you use exponents to represent an equivalent value? ● How are points graphed? ● How can we show the relationship between sequences on a graph? ● How can we best show data collected? ● Which graph would best represent the information gathered? ● Do all graphs and tables represent information in the same way?

Content Knowledge 1. The Commutative, Associative, Distributive Identity and Zero Properties of Multiplication can be used to solve problems. 2. Place-value patterns and the properties of multiplication can be used to mentally compute products of whole numbers. 3. Rounding or compatible numbers can be used to estimate products of whole numbers. 4. The traditional algorithm can be used to multiply multi-digit numbers by a one-digit number, two- digit or multi-digit numbers. 5. Exponential notation can be used to show repeated multiplication. 6. Coordinate graphing in the first quadrant (points, relationships, real world applications). 7. Calculate the distance between two points by using ordered pairs. 8. Analyze coordinate graphs to explore relationships.	**Skills** 1. Compute the product of two multi-digit factors using the standard multiplication algorithm. 2. Estimate a product using rounding and compatible numbers. 3. Represent a value using exponential notation. 4. Identify and graph points on a coordinate grid. 5. Represent real world mathematical problems by graphing. 6. Calculate the distance between two points by using ordered pairs. 7. Create and interpret coordinate graphs. 8. Analyze coordinate graphs to explore relationships.
Primary and Supplementary Resources My Math Grade 5 Student book My Math Grade 5 Volume 1 Teacher's Edition My Math Resources	

Board Approved: September 28, 2022

EdConnect Login

NJSLA Mathematics Operational Evidence Statements
https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491

NJSLA Released Items
https://nj.digitalitemlibrary.com/home
https://resources.newmeridiancorp.org/

Illustrative Mathematics

iReady
i-Ready makes differentiated instruction a practical reality for teachers and students. *i-Ready*:
- ➢ integrates powerful assessments and rich insights with effective and engaging instruction in reading and mathematics to address students' individual needs.
- ➢ empowers teachers every day to make more informed instructional decisions.
- ➢ motivates students with access to their own personalized path to growth.

XtraMath
- ➢ This program helps students practice their math facts for addition, subtraction, multiplication, and addition.
- ➢ Can individualize the fluency skills for each student.
- ➢ Can run reports to determine progress.

Scholastic Study Jams
- ➢ Fun videos which explain common mathematics concepts.
- ➢ Questions at the end of the video reinforce the concepts.

Khan Academy
- ➢ a set of online tools that help educate students. The organization produces short lessons in the form of YouTube videos.
- ➢ Its website also includes supplementary practice exercises and materials for educators.

5th grade Flip Book:
https://drive.google.com/file/d/1e5gDnsPow3IqskmyM1LEjm1PDVxc7mm_/view?usp=sharing

101 Math Discourse Questions:
http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf

Asking Effective Questions
http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf

Fluency Support for Grades 3-5
https://jenniferfindley.com/free-math-intervention-activities-grades-3-5/

Achieve the Core Coherence Map
https://achievethecore.org/coherence-map/5

Chapter 7:
Lesson 1-Hands On: Numerical Expressions
Vocabulary: numerical expression, evaluate
Lesson 2: Order of Operations
Vocabulary: order of operations
Lesson 3: Write Numerical Expressions
Lesson 4: Problem-Solving Investigation: Work Backward
Lesson 5: Hands On: Generate Patterns
Lesson 6: Patterns
Vocabulary: sequence, term
Chapter Project: "Recycling Rules"
Lesson 7: Hands On: Map Locations
Lesson 8: Ordered Pairs
Vocabulary: coordinate plane, origin, ordered pain, x-coordinate, y-coordinate
Lesson 9: Graph Patterns

Assessments:

Chapter 7:

1. Diagnostic Assessment: Am I Ready? completed in SE p. 473 or printed from *Assessment Masters* pp 160-162. A ready-made diagnostic test is available online.
2. Check My Progress SE p. 505 (after Lesson 4) or *Assessment Masters* p 165. A bank of questions is available in the Assessment tab in ConnectED.
3. Ch. 7 Summative Assessment completed in ConnectED or printed from *Assessment Masters.*
4. Ch. 7 Project

Differentiation in the Mathematics Classroom

Differentiate the Test

- Use alternative leveled chapter assessments (approaching level, on level and beyond level) to differentiate assessment for specific needs of students
- Provide option of print vs. online assessment
- Reduce the number of problems given
- Provide multiplication charts/calculators
- Provide hints written on tests, such as mnemonic devices
- Give extra time
- Provide a checklist of the steps needed to complete the problem
- Provide place value charts and resources
- Provide lots of white-space to make it less busy
- If still struggling, reteach & retest

Differentiation - Best Practices

- Use the Am I Read? Worksheets to review concepts students missed on the assessment.
- To reassess, use the chapter Diagnostic Test in the Assessment Masters book.
- Have students correct the items they missed and explain what their original error was.
- Have students complete the Chapter Pre-test to determine what skills in the chapter students already know.
- Provide multiplication tables (or calculators) to students who struggle with fluency. This allows you to see if they've mastered the skill at hand (i.e., adding/subtracting fractions) without the barrier of fact fluency issues. Click here for a copy of a multiplication chart.
- Use graphic organizers to teach multi-digit multiplication. Click here for an example of a multiplication graphic organizer.
- Use graphic organizers to teach long division. Click here for an example of a division graphic organizer.
- Use mnemonic devices to teach long division. Click here and here for two helpful mnemonic devices.
- Represent numbers in place value charts whenever possible. Give students their own laminated copies of place value charts so they can organize their thoughts while completing their work.
- Emphasize the role of diagramming in interpreting and solving problems in mathematics.
- Provide students with graph paper to help them organize their math in an effort to reduce errors being made due to handwriting.
- Use tasks that provide multiple entry points and provide scaffolds that support student participation.
- Have a vocabulary wall. Click here for access to printable vocabulary cards for your word wall.
- Provide reduced amount of homework for struggling learners. Give them 2 relevant math problems rather than an entire worksheet.
- Conference with the students often to learn about how they think about math.

Special Education Students

- Use the Am I Ready? Worksheets to review concepts students missed on the assessment.
- To reassess, use the chapter Diagnostic Test in the *Assessment Masters* book.
- Establish and teach rules and routines.
- Provide only one instruction at a time.
- Have students restate the instructions back in their own words.
- List instructions on the wall or board.
- Allow students to review and practice frequently.

English Language Learners

- Review glossary definitions for key vocabulary words in both English and Spanish.
- Be sure that students are correctly pronouncing key vocabulary words at the start of the lesson.
- Keep a classroom cognate chart and add to it when possible.
- For non-Spanish speaking ELLs, refer to the Multilingual eGlossary for interactive definitions in 13 languages.
- Provide sentence frames to assist with student response.

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Encourage the use of eTools and virtual manipulatives.
Allow additional time for students to complete work.
Encourage students to verbalize what they are doing by using words, pictures, manipulatives, and numbers.
Allow students more time to explain and justify their thinking process.
Build in time for repetition and practice.
Provide opportunities for students to explain the concepts to others.
Represent abstract concepts in a variety of ways such as words, symbols, drawings, movement, and acting out.
Create heterogeneous groups so students can learn from and model their peers' behaviors.
Reduce the number of problems given
Provide multiplication charts/calculators
Provide hints written on tests, such as mnemonic devices (i.e. PEMDAS)
Give extra time
Provide a checklist of the steps needed to complete the problem
Provide place value charts
Provide lots of white-space to make it less busy
If still struggling, reteach & retest

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Point to key words during instruction to assist in making connections and aiding comprehension.
Enunciate the endings of words to help ELLs distinguish subtle differences (i.e. tens and tenths).
During lessons, structure questions so students of different English proficiencies can answer in ways suitable to their level of understanding. For example, when comparing place values in two different numbers, you may ask, "Is eight greater than or less than 2?" Emerging students can answer with the short phrase "greater than." For expanding student, provide a sentence frame so they can answer in a complete sentence, such as _____ is greater than/less than _____. Encourage bridging students to provide more complex answers. For example, the student may explain what conclusion can be made from the comparison. "Eight is greater than two, so I know 9,085,216 is greater than 9,022,673.
Use manipulatives where appropriate. For example, counters, pretend money, unifix cubes, etc. These assist in making the transition from concrete to representational to abstract.

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At-Risk Students

Reduce the number of problems given
Provide calculators
Give extra time

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504 Students

Provide a checklist of the steps needed to complete the problem
Provide place value charts
Provide lots of white-space to make it less busy
If still struggling, reteach and retest

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Gifted and Talented Students

- ➢ Have students complete the Chapter Pre-test to determine what skills in the chapter they already know.
- ➢ When differentiating the classroom for gifted students, one should concentrate on five areas for differentiation: modifying content, allowing for student preferences, altering the pace of instruction, creating a flexible classroom environment, and using specific instructional strategies.
- ➢ The goal for gifted students is to increase critical thinking, problem-solving abilities, and creativity.
- ➢ Pose open-ended questions that require higher-level thinking.
- ➢ Model thinking strategies, such as decision-making and evaluation.
- ➢ Accept ideas and suggestions from students and expand on them.
- ➢ Facilitate original and independent problems and solutions.
- ➢ Help students identify rules, principles, and relationships.
- ➢ Take time to explain the nature of errors.
- ➢ Present students with paradoxes to analyze and test.
- ➢ Use analogies to introduce new concepts; ask students to create their own.
- ➢ Encourage tolerance for ambiguity with open-ended problems.
- ➢ Encourage students to use their intuition and follow their hunches.
- ➢ Study creative people and their thinking processes.
- ➢ Evaluate situations by analyzing possible consequences and implications.
- ➢ Help students practice creative reading, listening, and writing skills.
- ➢ Help students develop an understanding of their abilities, skills, interests, and learning styles.
- ➢ Allow students to explore topics of interest in small groups.
- ➢ Align possible problems with curriculum and standards. What areas of the curriculum are involved in the problem? What are the skills that students will use as they analyze the problem and suggest solutions?
- ➢ Plan for the best times to present the problems to students. Make sure to allow sufficient time for students to do their work.
- ➢ Write up a problem statement that is engaging for students and that puts the situation in an interesting context. The statement should not provide students with all of the information they will need, but suggest directions that they should pursue.

Ability Grouping for the Gifted Student:

- ➢ Create homogeneous groups for gifted students in the classroom only when students are working on skill development or reviewing material that they have already learned.
- ➢ Grouping strategies should be flexible, and students should be allowed to work independently at least occasionally according to their preferences.

➢ Students should have opportunities to select their own groups based on common interests.

Domain 3: Number and Operations in Base Ten - Fractions (NF)

Chapter 8: Fractions and Decimals (11 days)
Chapter 9: Add and Subtract Fractions (17 days)
Chapter 10: Multiply and Divide Fractions (16 days)

NJ 2016 Student Learning Standards: Mathematics Grade 5	NJDOE Mathematics Curricular Framework Guide Document and Supports Mathematics Curricular Framework
Number & Operations - Fractions **Use equivalent fractions as a strategy to add and subtract fractions.** 5.NF.1. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce and equivalent sum or difference of fractions with like denominators. 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. **Apply and extend previous understandings of multiplication and division to multiply and divide fractions.** 5.NF.3. Interpret a fraction as division of the numerator by the denominator. 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. 5.NF.4. Apply and Extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	**Mathematical Practices** **MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.** **highlight appropriate indicators for unit/domain** MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.

5.NF.4a. Interpret the product (a/b) x q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a x q / b. For example, use a visual fraction model to show (2/3) x 4 = 8/3, and create a story context for this equation. 5.NF.5a. Interpret multiplication as scaling (resizing) by 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. Interpret multiplication as scaling (resizing) by 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. 5.NF.6. Solve real world problems involving multiplication of fractions and mixed numbers, e.q., by using visual fraction models or equations to represent the problem. 5.NF.7a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. 5.NF.7b. Interpret division of a whole number by a unit fraction, and compute such quotients. 5.NF.7c. Solve real world problems involving division of unit fractions by non-zero whole numbers and whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem.	

Career Readiness, Life Literacies, and Key Skills Integration **NJSLS - CRLLKS 2020** **highlight appropriate indicators for unit/domain** CRLLKS1. Act as a responsible and contributing community members and employee. CRLLKS2. Attend to financial well-being. CRLLKS3. Consider the environmental, social and economic impacts of decisions. CRLLKS4. Demonstrate creativity and innovation. CRLLKS5. Utilize critical thinking to make sense of problems and persevere in solving them CRLLKS6. Model integrity, ethical leadership and effective management. CRLLKS7. Plan education and career paths aligned to personal goals. CRLLKS8. Use technology to enhance productivity increase collaboration and communicate effectively.persevere in solving them. CRLLKS9. Work productively in teams while using cultural/global competence.	**21st Century Student Outcomes** http://www.battelleforkids.org/networks/p21 **Learning and Innovation Skills** **highlight appropriate indicators for unit/domain** Think Creatively Work Creatively with Others Implement Innovations Reason effectively Use Systems Thinking Make Judgments and Decisions Solve Problems Communicate Clearly Collaborate with Others **Life and Career Skills** **highlight appropriate indicators for unit/domain** Adapt to Change Be Flexible Manage Goals and Time Work Independently Be Self-directed Learners Interact Effectively with Others Work Effectively in Diverse Teams
Enduring Understandings ● Numbers enable us to use the four operations to combine and separate quantities.	**Essential Questions** ● How do you find an equivalent fraction? ● How do you find the simplest form of a fraction?

• In order to add/subtract fractions one must obtain common denominators. • A fraction is in simplest form when 1 is the only common factor of the numerator and denominator. • Equivalent fractions are found by multiplying or dividing the numerator and denominator by the same nonzero number. • One way to add mixed numbers is to add the fractional parts and then add the whole number parts. Sometimes whole numbers or fractions need to be renamed. • One way to subtract mixed numbers is to subtract the fractional parts and then subtract the whole number parts. Sometimes whole numbers or fractions need to be renamed. • The concept of multiplying whole numbers can be used to multiply fractions. • A fraction is simply a representation of division. • Multiplication of a number does NOT always result in a larger number. • When multiplying by a fraction greater than 1, the number increases. • When multiplying by a fraction less the one, the number decreases. • Using rounding and compatible numbers are useful (effective and efficient) methods of estimating products. • Multiplication of a positive number by a factor smaller than 1 results in a product less than the original number. (Ex. **23.4** X **0.8** = **18.72**) • Division is the process of breaking into groups of equal number/amount. • The decimal/fraction of a quotient must be interpreted	• How do you estimate the sum or difference of two fractions? • How do you find the common multiple and least common multiple for two numbers? • How do you find the common denominator of two unlike fractions? • Why do you need common denominators to add and subtract fractions? • How do you find the sum or difference of fractions with unlike denominators? • How do you draw a picture or write an equation to solve a fraction number story? • How can you represent quantities that are greater than or equal to 1? • How can you model addition of mixed numbers? • How can you add mixed numbers? • How can you subtract mixed numbers? • How do you rename a fraction with an equivalent fraction? • How is multiplication of fractions similar to multiplication of whole numbers? • How is multiplication of fractions similar to division of whole numbers? • How is division with remainders similar to division with a fraction quotient (no remainders)? • How can multiplying fractions be represented with a visual model? • When does multiplication result in a smaller number? Larger number? • What happens to a number when it is multiplied by a fraction less than one? A number greater than one? • How do you determine the patterns when multiplying

as to the real world situation (round up, round down, or exact answer).	decimal numbers by 10, 100 or 1,000? ● What methods can you use to estimate the product of a decimals and whole number? ● How can you determine where the decimal belongs when multiplying numbers? ● How can models be used to show multiplication of decimals? ● How do you use the traditional method to multiply decimals? ● What happens when multiplying a decimal number by a factor smaller than 1? ● What patterns occur in our number system when dividing? ● How do you estimate the quotient of a decimals and whole number? ● How can you model can be used to show division of decimals? ● How do you use the traditional method to divide of decimals? ● How do you solve problems by interpreting the remainder?
Content Knowledge ● Equivalent fractions can be found by multiplying or dividing by a whole. ● Common multiples and least common multiples of two numbers can be used to find the common denominator of two unlike fractions in order to solve addition and subtraction of fractions.	**Skills** ● Calculate the equivalent fraction by multiplying or dividing by a whole. ● Calculate the simplest form of a given fraction. ● Estimate the sum or difference of two fractions. ● Find common multiples and least common multiples of two numbers.

● Pictures and equations can be used to represent and solve word problems. ● Models can be used to prove how to add and subtract mixed numbers. ● A fraction is the division of a numerator by its denominator. ● Use understandings of multiplication to multiply fractions by fractions and mixed numbers. ● Compatible numbers can be used to estimate the product and quotients of fractions an mixed numbers. ● The area of a rectangle can be found by multiplying fractions. ● The multiplication of fractions can can be used for rescaling or resizing. ● Models can be used to show fractions being divided by whole numbers. ● Decimal numbers can be multiplied by 10, 100 or 1,000 following a pattern. (***May*** include 0.1, 0.01 as well) ● Compatible numbers and rounding can be used to estimate the product of a decimals and whole number. ● Estimation can be used to place the decimal in a product. ● Concrete models can be used to multiply decimals. ● The traditional algorithm can be applied when multiplying decimals. ● Problem solving (application with multi-step problems). ● Decimals can be divided by 10, 100 or 1,000 following a pattern. ● Compatible numbers can be used to estimate the quotient of a decimals and whole number.	● Find the common denominator of two unlike fractions. ● Find the sum or difference of fractions with unlike denominators. ● Draw a picture and write an equation to solve fraction number stories. ● Calculate the sum of mixed numbers using common denominators. ● Calculate the difference of mixed numbers using common denominators. ● Write each fraction as a division expression. ● Express multiplication of fractions and whole numbers as parts of whole questions. ● Use compatible numbers to estimate products of fractions. ● Multiply fractions by fractions. ● Find the area of a rectangle using multiplication of fractions. ● Find the product of mixed numbers by converting to improper fractions. ● Use multiplication of fractions in scaling or resizing. ● Dividing whole numbers by unit fractions. ● Model the division of unit fractions by whole numbers. ● Multiply decimals by 10, 100 or 1,000 (***May*** include 0.1, 0.01 as well) ● Estimate the product of a decimals and whole number. ● Multiply decimals by placing the decimal in the estimated place value. ● Multiply decimals using concrete models. ● Multiply decimals using the traditional algorithm. ● Apply the multiplication of decimals to solving real world problems. ● Divide decimals by 10, 100 or 1,000.

• When dividing numbers with decimals, use your place value understanding to place the decimal. • Models can be used to show division of decimals. • The traditional algorithm of division can be applied to the division of decimal numbers.	• Estimate the quotient of a decimals and whole number. • Place the decimal belong when dividing numbers using your place value understanding. • Model the division of decimals. • Use the traditional method to divide of decimals. • Apply the division of decimals to real world problems.

Primary and Supplementary Resources

My Math Grade 5 Student book
My Math Grade 5 Volume 1 Teacher's Edition

My Math Resources

NJSLA Mathematics Operational Evidence Statements
https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491

NJSLA Released Items
https://nj.digitalitemlibrary.com/home
https://resources.newmeridiancorp.org/

Illustrative Mathematics

iReady
i-Ready makes differentiated instruction a practical reality for teachers and students. *i-Ready*:

- ➢ integrates powerful assessments and rich insights with effective and engaging instruction in reading and mathematics to address students' individual needs.
- ➢ empowers teachers every day to make more informed instructional decisions.
- ➢ motivates students with access to their own personalized path to growth.

XtraMath

- ➢ This program helps students practice their math facts for addition, subtraction, multiplication, and addition.

- ➢ Can individualize the fluency skills for each student.
- ➢ Can run reports to determine progress.

Scholastic Study Jams

- ➢ Fun videos which explain common mathematics concepts.
- ➢ Questions at the end of the video reinforce the concepts.

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- ➢ Its website also includes supplementary practice exercises and materials for educators.

5th grade Flip Book:
https://drive.google.com/file/d/1e5gDnsPow3IqskmyM1LEjm1PDVxc7mm_/view?usp=sharing

101 Math Discourse Questions:
http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf

Asking Effective Questions
http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf

Fluency Support for Grades 3-5
https://jenniferfindley.com/free-math-intervention-activities-grades-3-5/

Achieve the Core Coherence Map
https://achievethecore.org/coherence-map/5

- ➢

Chapter 8: Fractions and Decimals
Lesson 1-Fractions and Division
Vocabulary: fraction, numerator, denominator
Lesson 2: Greatest Common Factor
Vocabulary: common factors, greatest common factor (GCF)
Lesson 3: Simplest Form

Vocabulary: simplest form, equivalent fractions
Lesson 4: Problem-Solving Investigation: Guess, Check, and Revise
Lesson 5: Least Common Multiple
Vocabulary: multiple, common multiples, least common multiple (LCM)
Lesson 6: Compare Fractions
Vocabulary: least common denominator
Lesson 7: Hands On: Use Models to Write Fractions as Decimals
Lesson 8: Write Fractions as Decimals
Chapter Project: "Fraction Party"

Chapter 9:
Lesson 1: Round Fractions
Lesson 2: Add Like Fractions
Vocabulary: like fractions
Lesson 3: Subtract Like Fractions
Lesson 4: Hands On: Use Models to Add Unlike Fractions
Vocabulary: unlike fractions
Lesson 5: Add Unlike Fractions
Lesson 6: Hands On: Use Models to Subtract Unlike Fractions
Lesson 7: Subtract Unlike Fractions
Lesson 8: Problem-Solving Investigation: Determine Reasonable Answers
Lesson 9: Estimate Sums and Differences
Lesson 10: Hands On: Use Models to Add Mixed Numbers
Lesson 11: Add Mixed Numbers
Lesson 12: Subtract Mixed Numbers
Lesson 13: Subtract with Renaming
Chapter 9 Project: "Flight School Contest"

Chapter 10:
Lesson 1: Hands On: Part of a Number
Chapter 1 Project: "I'm Game"
Lesson 2: Estimate Products of Fractions
Lesson 3: Hands On: Model Fraction Multiplication

Lesson 4: Multiply Whole Numbers and Fractions
Lesson 5: Hands On: Use Models to Multiply Fractions
Lesson 6: Multiply Fractions
Lesson 7: Multiply Mixed Numbers
Lesson 8: Hands On: Multiplication as Scaling
Vocabulary: scaling
Lesson 9: Hands On: Division with Unit Fractions
Vocabulary: unit fraction
Lesson 10: Divide Whole Numbers by Unit Fractions
Lesson 11: Divide Unit Fractions by Whole Numbers
Lesson 12: Problem-Solving Investigation: Draw a Diagram

Assessments:

Chapter 8:

1. Diagnostic Assessment: Am I Ready? completed in SE p. 473 or printed from *Assessment Masters* pp 160-162. A ready-made diagnostic test is available online.
2. Check My Progress SE p. 505 (after Lesson 4) or *Assessment Masters* p 165. A bank of questions is available in the Assessment tab in ConnectED.
3. Ch. 8 Summative Assessment completed in ConnectED or printed from *Assessment Masters.*
4. Ch. 8 Project

Chapter 9:

1. Diagnostic Assessment: Am I Ready? Completed in SE p. 607 or printed from *Assessment Masters* pp. 210-212. A ready-made diagnostic test is available online.
2. Check My Progress SE p. 643 (after Lesson 5) or *Assessment Masters* p. 215. A bank of questions is available in the Assessment tab in ConnectED.
3. Check My Progress SE p. 669 (after Lesson 9) or *Assessment Masters* p. 216. A bank of questions is available in the Assessment tab in ConnectED.
4. Ch. 9 Summative Assessment completed in ConnectED or printed from *Assessment Masters.*
5. Ch. 9 Project

Chapter 10:

1. Diagnostic Assessment: Am I Ready? Completed in SE p. 701 or printed from *Assessment Masters* pp. 236-238. A ready-made diagnostic test is available online.

2. Check My Progress SE p. 731 or *Assessment Masters* p. 241. A bank of questions is available in the Assessment tab in ConnectED.
3. Check My Progress SE p. 757 or *Assessment Masters* p. 242. A bank of questions is available in the Assessment tab in ConnectED.
4. Ch. 10 Summative Assessment completed in ConnectED or printed from *Assessment Masters.*
5. Ch. 10 Project

Differentiation in the Mathematics Classroom

Differentiate the Test

- Use alternative leveled chapter assessments (approaching level, on level and beyond level) to differentiate assessment for specific needs of students
- Provide option of print vs. online assessment
- Reduce the number of problems given
- Provide multiplication charts/calculators
- Provide hints written on tests, such as mnemonic devices
- Give extra time
- Provide a checklist of the steps needed to complete the problem
- Provide place value charts and resources
- Provide lots of white-space to make it less busy
- If still struggling, reteach & retest

Differentiation - Best Practices

- Use the Am I Read? Worksheets to review concepts students missed on the assessment.
- To reassess, use the chapter Diagnostic Test in the Assessment Masters book.
- Have students correct the items they missed and explain what their original error was.
- Have students complete the Chapter Pre-test to determine what skills in the chapter students already know.
- Provide multiplication tables (or calculators) to students who struggle with fluency. This allows you to see if they've mastered the skill at hand (i.e., adding/subtracting fractions) without the barrier of fact fluency issues. Click here for a copy of a multiplication chart.
- Use graphic organizers to teach multi-digit multiplication. Click here for an example of a multiplication graphic organizer.
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- Use mnemonic devices to teach long division. Click here and here for two helpful mnemonic devices.
- Represent numbers in place value charts whenever possible. Give students their own laminated copies of place value charts so they can organize their thoughts while completing their work.
- Emphasize the role of diagramming in interpreting and solving problems in mathematics.
- Provide students with graph paper to help them organize their math in an effort to reduce errors being made due to handwriting.
- Use tasks that provide multiple entry points and provide scaffolds that support student participation.
- Have a vocabulary wall. Click here for access to printable vocabulary cards for your word wall.
- Provide reduced amount of homework for struggling learners. Give them 2 relevant math problems rather than an entire worksheet.
- Conference with the students often to learn about how they think about math.

Special Education Students

- Use the Am I Ready? Worksheets to review concepts students missed on the assessment.
- To reassess, use the chapter Diagnostic Test in the *Assessment Masters* book.
- Establish and teach rules and routines.
- Provide only one instruction at a time.
- Have students restate the instructions back in their own words.
- List instructions on the wall or board.
- Allow students to review and practice frequently.

English Language Learners

- Review glossary definitions for key vocabulary words in both English and Spanish.
- Be sure that students are correctly pronouncing key vocabulary words at the start of the lesson.
- Keep a classroom cognate chart and add to it when possible.
- For non-Spanish speaking ELLs, refer to the Multilingual eGlossary for interactive definitions in 13 languages.
- Provide sentence frames to assist with student response.

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Encourage the use of eTools and virtual manipulatives.
Allow additional time for students to complete work.
Encourage students to verbalize what they are doing by using words, pictures, manipulatives, and numbers.
Allow students more time to explain and justify their thinking process.
Build in time for repetition and practice.
Provide opportunities for students to explain the concepts to others.
Represent abstract concepts in a variety of ways such as words, symbols, drawings, movement, and acting out.
Create heterogeneous groups so students can learn from and model their peers' behaviors.
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Provide multiplication charts/calculators
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Point to key words during instruction to assist in making connections and aiding comprehension.
Enunciate the endings of words to help ELLs distinguish subtle differences (i.e. tens and tenths).
During lessons, structure questions so students of different English proficiencies can answer in ways suitable to their level of understanding. For example, when comparing place values in two different numbers, you may ask, "Is eight greater than or less than 2?" Emerging students can answer with the short phrase "greater than." For expanding student, provide a sentence frame so they can answer in a complete sentence, such as _____ is greater than/less than _____. Encourage bridging students to provide more complex answers. For example, the student may explain what conclusion can be made from the comparison. "Eight is greater than two, so I know 9,085,216 is greater than 9,022,673.
Use manipulatives where appropriate. For example, counters, pretend money, unifix cubes, etc. These assist in making the transition from concrete to representational to abstract.

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At-Risk Students

Reduce the number of problems given
Provide calculators
Give extra time

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504 Students

Provide a checklist of the steps needed to complete the problem
Provide place value charts
Provide lots of white-space to make it less busy
If still struggling, reteach and retest

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Gifted and Talented Students

- ➢ Have students complete the Chapter Pre-test to determine what skills in the chapter they already know.
- ➢ When differentiating the classroom for gifted students, one should concentrate on five areas for differentiation: modifying content, allowing for student preferences, altering the pace of instruction, creating a flexible classroom environment, and using specific instructional strategies.
- ➢ The goal for gifted students is to increase critical thinking, problem-solving abilities, and creativity.
- ➢ Pose open-ended questions that require higher-level thinking.
- ➢ Model thinking strategies, such as decision-making and evaluation.
- ➢ Accept ideas and suggestions from students and expand on them.
- ➢ Facilitate original and independent problems and solutions.
- ➢ Help students identify rules, principles, and relationships.
- ➢ Take time to explain the nature of errors.
- ➢ Present students with paradoxes to analyze and test.
- ➢ Use analogies to introduce new concepts; ask students to create their own.
- ➢ Encourage tolerance for ambiguity with open-ended problems.
- ➢ Encourage students to use their intuition and follow their hunches.
- ➢ Study creative people and their thinking processes.
- ➢ Evaluate situations by analyzing possible consequences and implications.
- ➢ Help students practice creative reading, listening, and writing skills.
- ➢ Help students develop an understanding of their abilities, skills, interests, and learning styles.
- ➢ Allow students to explore topics of interest in small groups.
- ➢ Align possible problems with curriculum and standards. What areas of the curriculum are involved in the problem? What are the skills that students will use as they analyze the problem and suggest solutions?
- ➢ Plan for the best times to present the problems to students. Make sure to allow sufficient time for students to do their work.
- ➢ Write up a problem statement that is engaging for students and that puts the situation in an interesting context. The statement should not provide students with all of the information they will need, but suggest directions that they should pursue.

Ability Grouping for the Gifted Student:

- ➢ Create homogeneous groups for gifted students in the classroom only when students are working on skill development or reviewing material that they have already learned.
- ➢ Grouping strategies should be flexible, and students should be allowed to work independently at least occasionally according to their preferences.

➢ Students should have opportunities to select their own groups based on common interests.

Domain 4: Measurement and Data (MD)	
Chapter 11: Measurement (17 days)	
NJ 2016 Student Learning Standards: Mathematics Grade 5 **Measurement and Data** **Convert like measurement units within a given measurement system.** 5.MD.1. Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to	**NJDOE Mathematics Curricular Framework** Guide Document and Supports Mathematics Curricular Framework **Mathematical Practices** **MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels**

0.05 m), and use these conversions in solving multi-step, real world problems. **Represent and interpret data** 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.*	**should seek to develop in their students.** **highlight appropriate indicators for unit/domain** MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively. MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.
Career Readiness, Life Literacies, and Key Skills Integration **NJSLS - CRLLKS 2020** **highlight appropriate indicators for unit/domain** CRLLKS1. Act as a responsible and contributing community members and employee. CRLLKS2. Attend to financial well-being. CRLLKS3. Consider the environmental, social and economic impacts of decisions. CRLLKS4. Demonstrate creativity and innovation. CRLLKS5. Utilize critical thinking to make sense of problems and persevere in solving them CRLLKS6. Model integrity, ethical leadership and effective management.	**21st Century Student Outcomes** http://www.battelleforkids.org/networks/p21 **Learning and Innovation Skills** **highlight appropriate indicators for unit/domain** Think Creatively Work Creatively with Others Implement Innovations Reason effectively Use Systems Thinking Make Judgments and Decisions Solve Problems Communicate Clearly Collaborate with Others **Life and Career Skills** **highlight appropriate indicators for unit/domain**

CRLLKS7. Plan education and career paths aligned to personal goals. CRLLKS8. Use technology to enhance productivity increase collaboration and communicate effectively.persevere in solving them. CRLLKS9. Work productively in teams while using cultural/global competence.	Adapt to Change Be Flexible Manage Goals and Time Work Independently Be Self-directed Learners Interact Effectively with Others Work Effectively in Diverse Teams
Enduring Understandings ● Different graphs can be incorporated to best show information gathered. ● Customary units of capacity can be converted. ● Line plots can represent measurement values that are fractions. ● Customary units of length can be converted. ● Metric units of measurement can be converted. ● Customary units of weight can be converted.	**Essential Questions** ● How are points graphed? ● How can we show the relationship between sequences on a graph? ● How can we best show data collected? ● Which graph would best represent the information gathered? ● Do all graphs and tables represent information in the same way? ● What are the relative sizes of measurement units within one system of units? ● How can we use decimal notation to describe length in the metric system? ● How can we solve problems that require expressing measurements given in a larger unit in terms of a smaller unit? ● How can we convert customary units of length?
Content Knowledge ● Line plots represent measurements.	**Skills** ● Create a line plot to represent measurements.

• Line plots can be used to find the *fair share*, or the amount of each if the total amount were redistributed equally. • Coordinate graphing in the first quadrant (points, relationships, real world applications) • Calculate the distance between two points by using ordered pairs. • Analyze coordinate graphs to explore relationships. • Capacity is the amount of liquid that a container can hold. • Fluid ounces, cups, pints, quarts, and gallons are units of capacity in the customary system. • Metric units of measurement can be converted. • Inch, foot, and yard are units of length in the customary system. • To convert larger units to smaller units, multiply; convert smaller units to larger units, divide. • Ounces, pounds, and tons are units of weight in the customary system. • Capacity is the amount of liquid that a container can hold. • Fluid ounces, cups, pints, quarts, and gallons are units of capacity in the customary system. • The metric system is a decimal system of measurement. • To convert metric units, multiply or divide by powers of 10.	• Identify and graph points on a coordinate grid. • Represent real world and mathematical problems by graphing. • Calculate the distance between two points by using ordered pairs. • Create and interpret coordinate graphs. • Analyze coordinate graphs to explore relationships. • Convert customary units of capacity (ex. c to oz).. • Convert metric units of length, capacity, and mass (ex. kg to g). • Convert customary units of length (ex. feet to yards).
Primary and Supplementary Resources My Math Grade 5 Student book My Math Grade 5 Volume 1 Teacher's Edition My Math Resources	

Board Approved: September 28, 2022

EdConnect Login

NJSLA Mathematics Operational Evidence Statements
https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491

NJSLA Released Items
https://nj.digitalitemlibrary.com/home
https://resources.newmeridiancorp.org/

Illustrative Mathematics

iReady
i-Ready makes differentiated instruction a practical reality for teachers and students. *i-Ready*:

- integrates powerful assessments and rich insights with effective and engaging instruction in reading and mathematics to address students' individual needs.
- empowers teachers every day to make more informed instructional decisions.
- motivates students with access to their own personalized path to growth.

XtraMath

- This program helps students practice their math facts for addition, subtraction, multiplication, and addition.
- Can individualize the fluency skills for each student.
- Can run reports to determine progress.

Scholastic Study Jams

- Fun videos which explain common mathematics concepts.
- Questions at the end of the video reinforce the concepts.

Khan Academy

- a set of online tools that help educate students. The organization produces short lessons in the form of YouTube videos.
- Its website also includes supplementary practice exercises and materials for educators.

5th grade Flip Book:
https://drive.google.com/file/d/1e5gDnsPow3IqskmyM1LEjm1PDVxc7mm_/view?usp=sharing

101 Math Discourse Questions:
http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf

Asking Effective Questions
http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf

Fluency Support for Grades 3-5
https://jenniferfindley.com/free-math-intervention-activities-grades-3-5/

Achieve the Core Coherence Map
https://achievethecore.org/coherence-map/5

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Chapter 11: Measurement
Lesson 1: Hands On: Measurement with a Ruler
Vocabulary: length, inch (in.)
Chapter Project: "Stepping It Up"
Lesson 2: Convert Customary Units of Length
Vocabulary: customary system, inch (in.), foot (ft), yard (yd), mile (mi), convert
Lesson 3: Problem-Solving Investigation: Use Logical Reasoning
Lesson 4: Hands On: Estimate and Measure Weight
Vocabulary: weight, ounce (oz), pound (lb)
Lesson 5: Convert Customary Units of Weight
Vocabulary: weight, ounce (oz), pound (lb), ton (T)
Lesson 6: Hands On: Estimate and Measure Capacity
Vocabulary: capacity, cups, pints, gallons
Lesson 7: Convert Customary Units of Capacity
Vocabulary: capacity, fluid ounce (fl oz), cup (c), pint (pt), quart (qt), gallon (gal)
Lesson 8: Display Measurement Data on a Line Plot
Vocabulary: fair share
Lesson 9: Hands On: Metric Rulers
Lesson 10: Convert Metric Units of Length

Vocabulary: metric system, centimeter (cm), millimeter (mm), meter (m), kilometer (km)
Lesson 11: Hands On: Estimate and Measure Metric Mass
Vocabulary: mass, gram (g), kilogram (kg)
Lesson 12: Convert Metric Units of Mass
Vocabulary: mass, gram (g), milligram (mg), kilogram (kg)
Lesson 13: Convert Metric Units of Capacity
Vocabulary: liter (L), millimeter (mL)

Assessments:

Chapter 11:

1. Diagnostic Assessment: Am I Ready? completed in SE p. 789 or printed from *Assessment Masters* p. 266. A ready-made diagnostic test is available online.
2. Check My Progress SE p. 831 (after Lesson 5) or *Assessment Masters* p. 267. A bank of questions is available in the Assessment tab in ConnectED.
3. Check My Progress SE p. 863 (after Lesson 10) or *Assessment Masters* p. 268. A bank of questions is available in the Assessment tab in ConnectED.
4. Ch. 11 Summative Assessment completed in ConnectED or printed from *Assessment Masters* pp. 270-283.
5. Ch. 11 Project

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Domain 5: Geometry (G)	
Chapter 12: Geometry	
NJ 2016 Student Learning Standards: Mathematics Grade 5 **Geometry** **Classify two-dimensional figures into categories based on their properties.** 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. **Measurement and Data**	**NJDOE Mathematics Curricular Framework** Guide Document and Supports Mathematics Curricular Framework **Mathematical Practices** **MP. The Standards for Mathematical Practice describe varieties of expertise that mathematics educators at all levels should seek to develop in their students.** **highlight appropriate indicators for unit/domain** MP.1. Make sense of problems and persevere in solving them. MP.2. Reason abstractly and quantitatively.

Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. 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 non-standard 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	MP.3. Construct viable arguments and critique the reasoning of others. MP.4. Model with mathematics. MP.5. Use appropriate tools strategically. MP.6. Attend to precision. MP.7. Look for and make use of structure. MP.8. Look for and express regularity in repeated reasoning.

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.	
Career Readiness, Life Literacies, and Key Skills Integration **NJSLS - CRLLKS 2020** **highlight appropriate indicators for unit/domain** CRLLKS1. Act as a responsible and contributing community members and employee. CRLLKS2. Attend to financial well-being. CRLLKS3. Consider the environmental, social and economic impacts of decisions. CRLLKS4. Demonstrate creativity and innovation. CRLLKS5. Utilize critical thinking to make sense of problems and persevere in solving them CRLLKS6. Model integrity, ethical leadership and effective management. CRLLKS7. Plan education and career paths aligned to personal goals. CRLLKS8. Use technology to enhance productivity increase collaboration and communicate effectively.persevere in solving them. CRLLKS9. Work productively in teams while using	**21st Century Student Outcomes** http://www.battelleforkids.org/networks/p21 **Learning and Innovation Skills** **highlight appropriate indicators for unit/domain** Think Creatively Work Creatively with Others Implement Innovations Reason effectively Use Systems Thinking Make Judgments and Decisions Solve Problems Communicate Clearly Collaborate with Others **Life and Career Skills** **highlight appropriate indicators for unit/domain** Adapt to Change Be Flexible Manage Goals and Time Work Independently Be Self-directed Learners Interact Effectively with Others

cultural/global competence.	Work Effectively in Diverse Teams
Enduring Understandings ● Three-dimensional or solid figures have length, width, and height. Many can be described, classified, and analyzed by their faces, edges, and vertices. ● Volume can be measured by counting the number of cubic units needed to fill a three-dimensional object. ● Polygons have many properties that can be described and classified by their sides and angles.	**Essential Questions** ● Calculate the volume of a rectangular prism using the formula Area of the Base * Height. ● Measure the volume of a three-dimensional solid using cubic units. ● Identify and classify polygons based on their properties.
Content Knowledge ● Volume of a prism is the area of the base multiplied by the height. ● Polygons can be classified based on their properties.	**Skills** ● Calculate the volume of a rectangular prism using the formula Area of the Base * Height. ● Measure the volume of a three-dimensional solid using cubic units. ● Identify and classify polygons based on their properties.
Primary and Supplementary Resources My Math Grade 5 Student book My Math Grade 5 Volume 1 Teacher's Edition My Math Resources EdConnect Login	

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https://docs.google.com/spreadsheets/d/18M5r1jk4P729fTpAlWAzrw1gE6tken233I-Yk0U712M/edit#gid=554025491

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Illustrative Mathematics

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i-Ready makes differentiated instruction a practical reality for teachers and students. *i-Ready*:

- integrates powerful assessments and rich insights with effective and engaging instruction in reading and mathematics to address students' individual needs.
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- This program helps students practice their math facts for addition, subtraction, multiplication, and addition.
- Can individualize the fluency skills for each student.
- Can run reports to determine progress.

Scholastic Study Jams

- Fun videos which explain common mathematics concepts.
- Questions at the end of the video reinforce the concepts.

Khan Academy

- a set of online tools that help educate students. The organization produces short lessons in the form of YouTube videos.
- Its website also includes supplementary practice exercises and materials for educators.

5th grade Flip Book:
https://drive.google.com/file/d/1e5gDnsPow3IqskmyM1LEjm1PDVxc7mm_/view?usp=sharing

101 Math Discourse Questions:
http://www.casamples.com/downloads/100MathDiscourseQuestions_Printable.pdf

Asking Effective Questions
http://www.edu.gov.on.ca/eng/literacynumeracy/inspire/research/CBS_AskingEffectiveQuestions.pdf

Fluency Support for Grades 3-5
https://jenniferfindley.com/free-math-intervention-activities-grades-3-5/

Achieve the Core Coherence Map
https://achievethecore.org/coherence-map/5

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Chapter 12: Geometry
Lesson 1: Polygons
Vocabulary: hexagon, pentagon, polygon, octagon, congruent angles, congruent sides, regular polygon
Lesson 2: Hands On: Sides and Angles of Triangles
Lesson 3: Classify Triangles
Vocabulary: attribute, types of triangles, equilateral, isosceles, scalene, acute, obtuse, right
Chapter Project: "Geo-Ville"
Lesson 4: Hands On: Sides and Angles of Quadrilaterals
Lesson 5: Classify Quadrilaterals
Vocabulary: trapezoid, parallelogram, rectangle, rhombus, square
Lesson 6: Hands On: Build Three-Dimensional Figures
Vocabulary: three-dimensional figure, net, cube, congruent figures, rectangular prism, face
Lesson 7: Three-Dimensional Figures
Vocabulary: three-dimensional figure, rectangular prism, triangular prism, face, edge, vertex, prism, base, cube
Lesson 8: Hands On: Use Models to Find Volume
Vocabulary: volume, unit cube, cubic unit
Lesson 9: Volume of Prisms
Vocabulary: volume
Lesson 10: Hands On: Build Composite Figures
Vocabulary: composite figure
Lesson 11: Volume of Composite Figures

Vocabulary: composite figure
Lesson 12: Problem-Solving Investigation: Make a Model

Assessments:

Chapter 12: Geometry

1. Diagnostic Assessment: Am I Ready? completed in SE p. 889 or printed from *Assessment Masters* pp 288-290. A ready-made diagnostic test is available online.
2. Check My Progress SE p. 921(after Lesson 3) or *Assessment Masters* pp. 293. A bank of questions is available in the Assessment tab in ConnectED.
3. Check My Progress SE p. 947 (after Lesson 7) or *Assessment Masters* pp. 294. A bank of questions is available in the Assessment tab in ConnectED.
4. Ch. 12 Summative Assessment completed in ConnectED or printed from *Assessment Masters* pp. 296-309.
5. Ch. 12 Project

Differentiation in the Mathematics Classroom

Differentiate the Test

- Use alternative leveled chapter assessments (approaching level, on level and beyond level) to differentiate assessment for specific needs of students
- Provide option of print vs. online assessment
- Reduce the number of problems given
- Provide a checklist of the steps needed to complete the problem
- Provide place value charts and resources
- Provide lots of white-space to make it less busy
- If still struggling, reteach & retest

- Provide multiplication charts/calculators
- Provide hints written on tests, such as mnemonic devices
- Give extra time

Differentiation - Best Practices

- ➢ Use the Am I Read? Worksheets to review concepts students missed on the assessment.
- ➢ To reassess, use the chapter Diagnostic Test in the Assessment Masters book.
- ➢ Have students correct the items they missed and explain what their original error was.
- ➢ Have students complete the Chapter Pre-test to determine what skills in the chapter students already know.
- ➢ Provide multiplication tables (or calculators) to students who struggle with fluency. This allows you to see if they've mastered the skill at hand (i.e., adding/subtracting fractions) without the barrier of fact fluency issues. Click here for a copy of a multiplication chart.
- ➢ Use graphic organizers to teach multi-digit multiplication. Click here for an example of a multiplication graphic organizer.
- ➢ Use graphic organizers to teach long division. Click here for an example of a division graphic organizer.
- ➢ Use mnemonic devices to teach long division. Click here and here for two helpful mnemonic devices.
- ➢ Represent numbers in place value charts whenever possible. Give students their own laminated copies of place value charts so they can organize their thoughts while completing their work.
- ➢ Emphasize the role of diagramming in interpreting and solving problems in mathematics.
- ➢ Provide students with graph paper to help them organize their math in an effort to reduce errors being made due to handwriting.
- ➢ Use tasks that provide multiple entry points and provide scaffolds that support student participation.
- ➢ Have a vocabulary wall. Click here for access to printable vocabulary cards for your word wall.
- ➢ Provide reduced amount of homework for struggling learners. Give them 2 relevant math problems rather than an entire worksheet.
- ➢ Conference with the students often to learn about how they think about math.

Special Education Students

- ➢ Use the Am I Ready? Worksheets to review concepts students missed on the assessment.
- ➢ To reassess, use the chapter Diagnostic Test in the *Assessment Masters* book.
- ➢ Establish and teach rules and routines.
- ➢ Provide only one instruction at a time.
- ➢ Have students restate the instructions back in their own words.
- ➢ List instructions on the wall or board.
- ➢ Allow students to review and practice frequently.
- ➢ Encourage the use of eTools and virtual manipulatives.
- ➢ Allow additional time for students to complete work.
- ➢ Encourage students to verbalize what they are doing by using words, pictures, manipulatives, and numbers.
- ➢ Allow students more time to explain and justify their thinking process.
- ➢ Build in time for repetition and practice.
- ➢ Provide opportunities for students to explain the concepts to others.
- ➢ Represent abstract concepts in a variety of ways such as words, symbols, drawings, movement, and acting out.
- ➢ Create heterogeneous groups so students can learn from and model their peers' behaviors.
- ➢ Reduce the number of problems given
- ➢ Provide multiplication charts/calculators
- ➢ Provide hints written on tests, such as mnemonic devices (i.e. PEMDAS)
- ➢ Give extra time
- ➢ Provide a checklist of the steps needed to complete the problem
- ➢ Provide place value charts
- ➢ Provide lots of white-space to make it less busy

English Language Learners

- ➢ Review glossary definitions for key vocabulary words in both English and Spanish.
- ➢ Be sure that students are correctly pronouncing key vocabulary words at the start of the lesson.
- ➢ Keep a classroom cognate chart and add to it when possible.
- ➢ For non-Spanish speaking ELLs, refer to the Multilingual eGlossary for interactive definitions in 13 languages.
- ➢ Provide sentence frames to assist with student response.
- ➢ Point to key words during instruction to assist in making connections and aiding comprehension.
- ➢ Enunciate the endings of words to help ELLs distinguish subtle differences (i.e. tens and tenths).
- ➢ During lessons, structure questions so students of different English proficiencies can answer in ways suitable to their level of understanding. For example, when comparing place values in two different numbers, you may ask, "Is eight greater than or less than 2?" Emerging students can answer with the short phrase "greater than." For expanding student, provide a sentence frame so they can answer in a complete sentence, such as _____ is greater than/less than _____. Encourage bridging students to provide more complex answers. For example, the student may explain what conclusion can be made from the comparison. "Eight is greater than two, so I know 9,085,216 is greater than 9,022,673.
- ➢ Use manipulatives where appropriate. For example, counters, pretend money, unifix cubes, etc. These assist in making the transition from concrete to representational to abstract.

<table>
<tr><td>➢ If still struggling, reteach & retest</td><td></td></tr>
<tr><td>At-Risk Students
➢ Reduce the number of problems given
➢ Provide calculators
➢ Give extra time</td><td>504 Students
➢ Provide a checklist of the steps needed to complete the problem
➢ Provide place value charts
➢ Provide lots of white-space to make it less busy
➢ If still struggling, reteach and retest</td></tr>
<tr><td colspan="2">Gifted and Talented Students
➢ Have students complete the Chapter Pre-test to determine what skills in the chapter they already know.
➢ When differentiating the classroom for gifted students, one should concentrate on five areas for differentiation: modifying content, allowing for student preferences, altering the pace of instruction, creating a flexible classroom environment, and using specific instructional strategies.
➢ The goal for gifted students is to increase critical thinking, problem-solving abilities, and creativity.
➢ Pose open-ended questions that require higher-level thinking.
➢ Model thinking strategies, such as decision-making and evaluation.
➢ Accept ideas and suggestions from students and expand on them.
➢ Facilitate original and independent problems and solutions.
➢ Help students identify rules, principles, and relationships.
➢ Take time to explain the nature of errors.
➢ Present students with paradoxes to analyze and test.
➢ Use analogies to introduce new concepts; ask students to create their own.
➢ Encourage tolerance for ambiguity with open-ended problems.
➢ Encourage students to use their intuition and follow their hunches.
➢ Study creative people and their thinking processes.
➢ Evaluate situations by analyzing possible consequences and implications.
➢ Help students practice creative reading, listening, and writing skills.
➢ Help students develop an understanding of their abilities, skills, interests, and learning styles.
➢ Allow students to explore topics of interest in small groups.</td></tr>
</table>

- ➢ Align possible problems with curriculum and standards. What areas of the curriculum are involved in the problem? What are the skills that students will use as they analyze the problem and suggest solutions?
- ➢ Plan for the best times to present the problems to students. Make sure to allow sufficient time for students to do their work.
- ➢ Write up a problem statement that is engaging for students and that puts the situation in an interesting context. The statement should not provide students with all of the information they will need, but suggest directions that they should pursue.

Ability Grouping for the Gifted Student:

- ➢ Create homogeneous groups for gifted students in the classroom only when students are working on skill development or reviewing material that they have already learned.
- ➢ Grouping strategies should be flexible, and students should be allowed to work independently at least occasionally according to their preferences.
- ➢ Students should have opportunities to select their own groups based on common interests.