**Subject**

**Elementary- 5th Grade Mathematics**

**Curriculum Guide**

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**LINDEN PUBLIC SCHOOLS**

**LINDEN, NEW JERSEY**

**Dr. Marnie Hazelton**

**SUPERINTENDENT**

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**DIRECTOR OF MATHEMATICS, VOCATIONAL AND TECHNICAL SUBJECTS**

**The Linden Board of Education adopted the Curriculum Guide on:**

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| **July 28, 2022** |  | **Education Report #22** |
| **Date** |  | **Agenda Item** |
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| **Rationale** | | |

**EDUCATION EQUITY:** The Linden Public School District guarantees each student equal educational opportunity regardless of age, race, color, creed, religion, gender, language, affectional or sexual orientation, ancestry, national origin, marital or economic status. For Information, contact District Educational Equity Officer Kevin Thurston at **(**908) 486-2800 x 8307**.**

**NONDISCRIMATION:** The Linden Public School District does not discriminate against handicapped persons in admission or access to or treatment or employment in its programs, activities, and vocational opportunities. For information contact District Public 504 Officer Annabell Louis at (908) 486-2800 x 8025.

**Linden Public Schools Vision**

The Linden Public School District is committed to developing respect for diversity, excellence in education, and a commitment to service, in order to promote global citizenship and ensure personal success for all students

**Linden Public Schools Mission**

The mission of the Linden Public School District is to promote distinction through the infinite resource that is Linden’s diversity, combined with our profound commitment to instructional excellence, so that each and every student achieves their maximum potential in an engaging, inspiring, and challenging learning environment.

**Math Department Vision**

To equip students with the understanding and application of mathematical skills and processes to foster a drive for advanced mathematics and higher-level thinking.

**Math Department Mission Statement**

To develop a community of learners who construct and communicate meaning from the mathematical world around them. Students will experience mathematics that encourage them to think critically, discover and apply concepts to solve problems strategically. Students will be encouraged to solve equations with accuracy, efficiency, and flexibility. Furthermore, students will have a multitude of opportunities to apply mathematical tools and practice standards to solve real-world and multi-step problems.

**Math Department Goals**

* Provide opportunities for student to develop computation skills, conceptual understanding, and problem-solving skills
* Require students to explain, justify or prove their thinking through mathematical reasoning, modeling, and speaking

Course Description

The fifth-grade mathematics program focuses on four content areas. Students develop an understanding and fluency with addition and subtraction of fractions, an understanding of the multiplication of fractions, extending division to two- digit dividers, and developing an understanding of volume. Addition and subtraction of fractions extends to fractions with unlike denominators. Students learn to make reasonable estimates of the sums. Discussion of division of fractions begins. Fluency of multi-digit addition, subtraction, multiplication and division is finalized and the ability to make reasonable estimates is strengthened. Volume is taught as an attribute of three-dimensional space. Students select appropriate units, strategies, and tools for solving problems involving volumes. Mathematical concepts are not presented in isolation but are linked to situations and contexts that are relevant to everyday life. Grade 5 students can complete an optional summer mathematics project prior to entering grade 5.

Course Instructional Materials

* + - Into Math Book
    - [**hmhco.com/ed**](http://hmhco.com/ed)
    - District Rubric for Constructed Response
    - Rubric for Mathematical Problem Solving/Critical Thinking based on the Mathematical Practices
    - Into Math Games, Learning Centers, and Literature

Standards and NJDOE Mandates Guiding Instruction

* 1. New Jersey Student Learning Standards

<https://www.state.nj.us/education/cccs/>

* 1. Power Standards from NJSLS
* 5.NBT.A Understand the place value system.
* 5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.
* 5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.
* 5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.
* 5. MD.C Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

General Interdisciplinary Connections / Materials

* Language Arts: Literature relevant to the topics covered in each unit. Utilize proofreading and editing skills when solving constructed responses.
* Fine and Performing Arts: Utilize instructional videos relevant to the topics covered in each unit. Identify and compare the use of fractions, ratios, and patterns in musical compositions where appropriate.
* Science & Technology: Scientific or Technological advances made during or relevant to the topics covered in each unit. Discover repeated patterns to make predictions and solve problems. Use evidence to support findings and solutions to problems. Use language to describe relationships and change in relationships in a rational way.

Diversity, Equity, and Inclusion

* Use students’ interests in conceptualized tasks
* Expose students to a diverse group of mathematicians
* Design assessments and assignments with a variety of response types
* Use systematic grading and participation methods
* Encourage students to embrace a growth mindset

Pacing Guide

Linden Public Schools

Into Math Pacing Guide

5th Grade

2022-2023

Routine Building and Center Development – September 2022

**Unit 1 Whole Numbers, Expressions, and Volume**

Module 1 - Place Value, Multiplication, and Expressions - September 8th – September 23rd

**Edmentum BOY Testing September 19th – September 30th**

Module 2 – Understand Division of Whole Numbers – September 27th  – October 5th

Module 3 – Practice Division of Whole Numbers – October 6th  – October 14th

Module 4 - Expressions– October 17th   – October 21st

Module 5 – Volume – October 24th - November 7th

**Unit 2 Add and Subtract Fractions and Mixed Numbers**

Module 6 – Understanding Adding and Subtracting Fractions and Mixed Numbers with Unlike Denominators – November 14th – November 23rd

Module 7 – Adding and Subtraction Fractions and Mixed Numbers with Unlike Denominators – November 28th – December 9th

**Unit 3 Multiply Fractions and Mixed Numbers**

Module 8 – Understand Multiplication of Fractions – December 12th – January 11th

Module 9 – Understand and Apply Multiplication of Mixed Numbers – January  12th  – January 20th

**Unit 4 Divide Fractions and Convert Customary Units**

Module  10 – Understand Division with Whole Numbers and Unit Fractions –  January 23rd  – February 8th

**Edmentum MOY Assessment January 23rd to February 3rd**

Module 11 – Divide with Whole Numbers and Unit Fractions – February 9th – February 21st

Module 12 – Customary Measurement – February 22nd – March 3rd

**Unit 5 Add and Subtract Decimals**

Module 13 – Decimal Place Value – March 6th –March 13th

Module 14 – Add and Subtract Decimals – March 14th  - March 24th

**Unit 6 Multiplying Decimals**

Module 15- Multiply Decimals and Whole Numbers – March 27th – April 6th

Module 16 – Multiplying Decimals – April 17th – April 21st

**Unit 7 Divide Decimals and Convert Metric Units**

Module 17 – Divide Decimals April 24th – May 5th

Module 18 – Customary and Metric Measurement – May 8th – May 12th

**Unit 8 Graphs, Patterns, and Geometry**

Module 19 – Graphs and Patterns – May 15th – May 26th

**Edmentum EOY Assessment May 22nd to June 2nd**

Module 20 – Classifying Two Dimensional Shapes – May 30th – June 8th

Getting Ready for Grade 6 Lessons – To be determined

\***Assessment days are built into each chapter**.

Beginning, Middle, and End-of-the-Year Assessments built into assessment calendar

Vertical Integration – Program Mapping

**4th Grade**

**Number and Operations in Base Ten**

* Students understand whole number and decimal place value.
* Students perform whole-numbers operations, multiply fractions, and write fractions in decimal notation.

**Operations and Algebraic Thinking**

* Students use the distributive property to multiply whole numbers and solve multi-step problems involving operations with whole numbers.
* Students generate and analyze patterns involving numbers or shapes, that follow a given rule.

**Number and Operations – Fractions**

* Students find factors and multiplies of given numbers and find equivalent fractions.
* Students add and subtract fractions and mixed numbers with like denominators and multiply whole numbers and fractions.

**Geometry**

* Students read and display data on line plots.
* Students develop an understanding of points, lines, line segments, rays, and angles.
* Students classify quadrilaterals and triangles based on their properties.

**Measurement and Data**

* Students apply formulas to solve perimeter and area problems.
* Students find equivalence in units of measure.
* Students read and make line plots.

**6th Grade**

**Number and Operations in Base Ten**

* Students write and evaluate exponents and use whole number and decimal computations.
* Students evaluate expression including decimals and exponents and fluently complete operations with both whole-numbers and decimals.

**Operations and Algebraic Thinking**

* Students extend their understanding of order of operations to include exponents.
* Students extend their understanding of numerical expressions to evaluate, write, and interpret algebraic expressions.
* Students use tables, equations, and graphs to represent two quantities in a real-world problem that change in relationship to each other (dependent and independent variables).

**Number and Operations – Fractions**

* Students evaluate expressions and solve equations that involve fractions and mixed numbers.
* Students use fraction computations to solve equations, use fraction computations to evaluate numerical expressions, and divide fractions.

**Geometry**

* Students graph in all four quadrants of the coordinate grid.
* Students use all four quadrants to find distances on a coordinate plane and graph linear equations.
* Students find the area of parallelograms, rhombuses, triangles, and special quadrilaterals.
* Students determine the surface area of three-dimensional solids (that are made up of rectangular and triangular faces).

**Measurement and Data D**

* Students apply their understanding of formulas to solve real world volume problems.
* Students convert measurements within the customary system, within the metric system, and between the two units.
* Students use line plots to display and summarize data and begin working with histograms.

Accommodations, Modifications, and Teacher Strategies

(specific recommendations are made in each unit)

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| **Instructional Strategies**   * Teacher Presentation * Student Presentation * Class Discussion * Socratic Discussion * Reading for Meaning * Inquiry Design Model * Interactive Lecture * Interactive Notetaking * Compare and Contrast * Research Based * Problem Based * Project Based   **504 Plans**  Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:   * walk, breathe, eat, or sleep * communicate, see, hear, or speak * read, concentrate, think, or learn * stand, bend, lift, or work   Examples of accommodations in 504 plans include:   * preferential seating * extended time on tests and assignments * reduced homework or classwork * verbal, visual, or technology aids * modified textbooks or audio-video materials * behavior management support * adjusted class schedules or grading * verbal testing * excused lateness, absence, or missed classwork * pre-approved nurse's office visits and accompaniment to visits occupational or physical therapy | **Gifted and Talent Accommodations and Modifications**   * Allow for further independent research on topics of interest related to the unit of study * Advanced leveled readers and sources * Increase the level of complexity * Decrease scaffolding * Variety of finished products * Allow for greater independence * Learning stations, interest groups * Varied texts and supplementary materials * Use of technology * Flexibility in assignments * Varied questioning strategies * Encourage research * Strategy and flexible groups based on formative assessment or student choice * Acceleration within a unit of study * Exposure to more advanced or complex concepts, abstractions, and materials * Encourage students to move through content areas at their own pace * After mastery of a unit, provide students with more advanced learning activities, not more of the same activity * Present information using a thematic, broad-based, and integrative content, rather than just single-subject areas | **Special Education and At-Risk Accommodations and Modifications**   * Focus on concept not details * More visual prompts * Leveled readers and teacher annotated sources * Timelines and graphic organizers * Remove unnecessary material, words, etc., that can distract from the content * Use of off-grade level materials * Provide appropriate scaffolding * Limit the number of steps required for completion * Time allowed * Level of independence required * Tiered centers, assignments, lessons, or products * Provide appropriate leveled reading materials * Deliver the content in “chunks” * Varied texts and supplementary materials * Use technology, if available and appropriate * Varied homework and products * Varied questioning strategies * Provide background knowledge * Define key vocabulary, multiple-meaning words, and figurative language. * Use audio and visual supports, if available and appropriate * Provide multiple learning opportunities to reinforce key concepts and vocabulary * Meet with small groups to reteach idea/skill * Provide cross-content application of concepts * Ability to work at their own pace * Present ideas using auditory, visual, kinesthetic, & tactile means * Provide graphic organizers and/or highlighted materials * Strategy and flexible groups based on formative assessment * Differentiated checklists and rubrics, if available and appropriate | **English Language Learners Accommodations and Modifications**   * Focus on concept not details * More visual prompts * Leveled readers and teacher annotated sources * Guided notes with highlighted words and concepts * Use of Merriam-Webster’s ELL dictionary * Timelines and graphic organizers * Remove unnecessary material, words, etc., that can distract from the content * Use of off-grade level materials * Provide appropriate scaffolding * Limit the number of steps required for completion * Time allowed * Level of independence required * Tiered centers, assignments, lessons, or products * Provide appropriate leveled reading materials * Deliver the content in “chunks” * Varied texts and supplementary materials * Use technology, if available and appropriate * Varied homework and products * Varied questioning strategies * Provide background knowledge * Define key vocabulary, multiple-meaning words, and figurative language. * Use audio and visual supports, if available and appropriate * Provide multiple learning opportunities to reinforce key concepts and vocabulary * Meet with small groups to reteach idea/skill * Provide cross-content application of concepts * Ability to work at their own pace * Present ideas using auditory, visual, kinesthetic, & tactile means * Provide graphic organizers and/or highlighted materials * Strategy and flexible groups based on formative assessment * Differentiated checklists and rubrics, if available and appropriate |

Elementary Math Department 6 Point District Rubric for Constructed Response

6

* All of 5 AND
* solves the problem another way in order to check their solution
* OR describes how you might solve this type of problem differently the next time and why

5

* All of 4 AND
* writes a step by step explanation with **grade level** vocabulary of strategies used to solve the problem

4

* (all items below must be included, **if appropriate**)
* all parts of the problem are answered correctly with labels
* a labeled visual representation (diagram, picture, model, graph, chart, table, etc.)
* an equation/number sentence
* writes a step by step explanation of strategies used to solve the problem (the reader can follow the steps to understand how the problem was solved)
* shows all work

3

* has a partially correct answer with a reasonable mathematical plan; may be missing one/some of the items noted in 4

2

* there are multiple errors OR inappropriate explanation OR no explanation is provided; OR has the beginning of a reasonable mathematical plan

1

* major errors are present OR explanation does not relate to the problem
* no response

Constructed Response Revision Rubric

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| **Rubric for Mathematics Problem Solving/Critical Thinking**  **based on the Mathematical Practices** | | | | |
|  | **Expert** | **Practitioner** | **Apprentice** | **Novice** |
| Perseverance | I **try many times** to understand and solve a math problem. | I make **some attempt** to understand and solve a math problem. | I make **one attempt** to understand and solve a math problem. | I make **no** attempt to understand and solve a math problem. |
| Information | I reason what information is needed and not needed to solve this problem | I reason what information is needed and not needed to solve this problem, **most of the time**. | I reason what information is needed and not needed to solve this problem - **some of the time** | It is **difficult** for me to reason what information is needed and not needed to solve this problem. |
| Understanding | I understand the math problem and explain my strategies/steps to others. | I **understand the math** problem and/but it’s **difficult** for me to put into my own words. | I **somewhat understand** the math problem and/but it’s **difficult** for me to put into my own words. | I am having **difficulty understanding** the math problem. |
| Plan | I show **all** my mathematical thinking and strategies to solve the problem. | I show **most** of my mathematical thinking and strategies to solve the problem. | I do not show **much** of my mathematical thinking and strategies to solve the problem. | I do not show any of my mathematical thinking and strategies. |
| Model with mathematics and using appropriate tools | I use math symbols, numbers, and/or math tools, diagrams/pictures to **solve** the problem **correctly**. | I **attempt** to use math symbols, numbers, and/or math tools, diagrams/pictures to solve the problem, but it has a **minor mistak**e. | I **attempt** to use math symbols, numbers, and/or math tools, diagrams/pictures to solve the problem, but it has **mistakes**. | I have **difficulty** using math symbols, numbers, math tools, diagrams/pictures  to solve the problem |
| Revision and Reflection | I revise **on my own**, I use what I already know about math to solve the problem and/or I apply a strategy that I used to solve another math problem. | I revise with **some support**. **If reminded**, I use what I already know about math to solve the problem and/or I apply a strategy that I used to solve another math problem. | I revise **with a lot of help**, prompts or revisiting a strategy. | I only revise with a step by step explanation and **more direct instruction**. |

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| **Unit: Number and Operations in Base Ten** |
| **Overview:**  • Understand the place value system.  • Perform operations with multi-digit whole numbers and with decimals to hundredths.  Time Period: **First- Third Trimester** Length: **12 weeks** |

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| **STAGE 1 – Desired Results** |

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| **Mathematical Practices**  1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  3. Construct viable arguments and critique the reasoning of others.  4. Model with mathematics.  5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning  Career Ready Practices  CRP4.  Communicate clearly and effectively and with reason.  CRP6. Demonstrate creativity and innovation.  CRP8.  Utilize critical thinking to make sense of problems and persevere in solving them.   |  | | --- | | **New Jersey Student Learning Standards- Mathematics** | |  |  |  | | --- | | **Introduction- Grade 5** | | |  |  | | --- | --- | | MA.5.5.2 | Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately. | |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  | | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | | **Number and Operations in Base Ten**   |  |  | | --- | --- | | 5.NBT.A | Understand the place value system. | | 5.NBT.A.3a | Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (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. | | 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. | | 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. | |   **Cluster A**: **Understand the place value system**  **Essential Questions…**   * Why is place value of numbers important? * How does understanding place value help us to perform operations? * How can you describe the relationship between two place-value positions? * How do you read, write, and represent whole numbers through hundred million? * How can you use an exponent to show powers of 10? * How can you use a basic fact and a pattern to multiply by a 2-digit number? * How do you read, write, and represent decimals through thousandths? * How can you use place value to round decimals to a given place? * How can patterns help you place the decimal point in a product? * How can patterns help you place the decimal point in a quotient?   **Enduring Understanding…**   * The base-ten place value system contributes to understanding the value of digits in numbers. * Place value allows us to efficiently multiply and divide by multiples of ten.   **Students will know...**  I. Key Vocabulary/Terms: base ten, tenths, hundredths, thousandths, decimal, and place value  II. Key Concepts/Ideas: By the end of the year,   * The relationship between decimals and fractions. * A digit in one place represents 10 times what it represents in the place to its right and 1/10 of what it represents in the place to its left. * The relationship of the placement of the decimal point when a decimal is multiplied or divided by a power of 10. * How to use place value to round decimals. * Benchmark numbers can help students round.   III. Possible Misunderstandings:   * Students may confuse directions for finding place values. * Students may omit or incorrectly use the period when writing a number. * Students may misinterpret bases and exponents. * Students write hundredths instead of thousandths for a shaded region. * When finding the difference, students place the decimal point incorrectly. * Students place the decimal point in a sum incorrectly.   **Students will be able to...**   * Use base ten blocks, pictures of base ten blocks, and interactive images of base ten blocks to manipulate and investigate the place value relationships. * Explain why when you multiply a number by 10 we add a zero to the end of the number. * Read and write decimals to the thousandths. * Compare decimals to the thousandths using base ten numerals, number names, and expanded form. * Record the results of the comparisons of decimals to the thousandths using <, >, =. * Compare decimals to the thousandths.   **Cluster B**: **Perform operations with multi-digit whole numbers and with decimals to hundredths**  **Essential Questions…**   * Why do you use a standard algorithm for multiplying multi-digit whole numbers? * How can multiplication, division, addition and subtraction of decimal numbers be modeled? * What are the standard procedures for finding products involving decimals? * How do you multiply by 1-digit numbers? * How do you multiply by multi-digit numbers? * How is multiplication used to solve a division problem? * How can you use the strategy *solve a simpler problem* to help you solve a division problem? * How can you tell where to place the first digit of a quotient without dividing? * How do you solve and check division problems? * How can you use base-ten blocks to model and understand division of whole numbers? * How can you use partial quotients to divide by 2-digit divisors? * How can you use compatible numbers to estimate quotients? * How can you divide by 2-digit divisors? * When solving a division problem, when do you write the remainder as a fraction? * How can you adjust the quotient if your estimate is too high or too low? * How can the strategy *draw a diagram* help you solve a division problem? * How can you use base-ten blocks to model decimal addition? * How can you use base-ten blocks to model decimal subtraction? * How can you estimate decimal sums and differences? * How can place value help you add decimals? * How can place value help you subtract decimals? * How can you use addition or subtraction to describe a pattern or create a sequence with decimals? * How can the strategy *make a table* help you organize and keep track of your bank account balance? * Which method could you choose to find decimal sums and differences? * How can you use a model to multiply a whole number and a decimal? * How can you use properties and place value to multiply a decimal and a whole number? * How can you use expanded form and place value to multiply a decimal and a whole number? * How can the strategy *draw a diagram* help you solve a decimal multiplication problem? * How can you use a model to multiply decimals? * What strategies can you use to place a decimal point in a product? * How do you know you have the correct number of decimal places in your product? * How can you use a model to divide a decimal by a whole number? * How can you estimate decimal quotients? * How can you divide decimals by whole numbers? * How can you use a model to divide by a decimal? * How can you place the decimal point in the quotient? * When do you write a zero in the dividend to find a quotient? * How do you use the strategy *work backward* to solve multi-step decimal problems?   **Enduring Understanding…**   * Standard algorithms are efficient methods for performing calculations. * Conceptual understanding of arithmetic calculations is developed through rectangular arrays, area models, and/or equations. * The relationship between multiplication and division can be used to find whole-number quotients of multi-digit dividends and divisors.   **Students will know...**  I. Key Vocabulary/Terms: multiply, factor, product, partial products, division, dividend, sum, and difference  II. Key Concepts/Ideas: By the end of the year,   * The relationship between partial products and the standard algorithm. * To use equations, rectangular arrays, arrays, and/or area models to explain calculations and/or ways to calculate. * To use concrete models, drawings or strategies based on place value properties of operations and/or the relationship between addition and subtraction can explain how to add, subtract, multiply and divide.   III. Possible Misunderstandings:   * Student may add regrouped digits before multiplying the next place value. * Students may not understand how to break apart a dividend. * Students do not place a zero in the quotient. * Students do not regroup tens to continue modeling partial products.   **Students will be able to...**   * Solve computational problems with whole numbers and decimals using addition, subtraction, multiplication, and division. * Find whole-number quotients of whole numbers (with up to four-digit dividends and two-digit divisors) and explain and illustrate the strategy they used. * Add, subtract, multiply, and divide decimals to the hundredths and explain and illustrate the strategy they used. |

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| **Unit: Operations and Algebraic Thinking** |
| **Overview:**  • Write and interpret numerical expressions.  • Analyze patterns and relationships.  Time Period: **First Trimester** Length: 7 **weeks** |

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| **STAGE 1 – Desired Results** |

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| **Mathematical Practices**  1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  3. Construct viable arguments and critique the reasoning of others.  4. Model with mathematics.  5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning  Career Ready Practices  CRP4.  Communicate clearly and effectively and with reason.  CRP6. Demonstrate creativity and innovation.  CRP8.  Utilize critical thinking to make sense of problems and persevere in solving them.   |  | | --- | | **New Jersey Student Learning Standards- Mathematics** | |  |  |  | | --- | | **Introduction- Grade 5** | | |  |  | | --- | --- | | MA.5.5.2 | Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication, and division. They apply their understandings of models for decimals, decimal notation, and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations, and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately. | |   **Operations and 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.B | Analyze patterns and relationships. | | 5.OA.B.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. |   **Cluster A**: **Write and interpret numerical expressions**  **Essential Questions…**   * Why are there various uses of grouping symbols in mathematical expressions? * How can we find the value of a given numerical expression? * How can you use properties of operations to solve problems? * How can you use a numerical expression to describe a situation? * In what order must operations be evaluated to find the solution to a problem? * In what order must operations be evaluated to find a solution when there are parentheses within parentheses?   **Enduring Understanding…**   * Using grouping symbols allows us to write mathematical expressions efficiently and interpret them correctly.   **Students will know...**  I. Key Vocabulary/Terms: distributive property, numerical expression, evaluate, and order of operations  II. Key Concepts/Ideas: By the end of the year,   * How to place grouping symbols in equations to make the equations true. * How to write expressions and interpret the meaning of a numerical expression. * How to compare expressions that are grouped differently.   III. Possible Misunderstandings:   * Students do not properly place parentheses when creating equations or expressions to represent problems. * Expressions are evaluated from left to right without consideration of the type of operation * Students may not distribute the first factor to each addend when applying the distributive property.   **Students will be able to...**   * Write an expression using grouping symbols to represent the total, given a specific quantity of manipulatives. * Practice writing expressions for calculations given in words such as, “divide 144 by 12, and then subtract 7/8,” they write (144 ÷ 12) – 7/8.   **Cluster B**: **Analyze patterns and relationships**  **Essential Questions…**   * How can number patterns be analyzed and graphed? * How can number patterns and graphs be used to solve problems? * How can you identify a relationship between two numerical patterns? * How can you use the strategy *solve a simpler problem* to help you solve a problem with patterns? * How can you write and graph ordered pairs on a coordinate grid using two numerical patterns?   **Enduring Understanding…**   * Patterns enable us to discover, analyze, describe, extend, and formulate concrete understandings of mathematical and real-world situations.   **Students will know...**  I. Key Vocabulary/Terms: numerical patterns, relationship, ordered pairs, and coordinate grid  II. Key Concepts/Ideas: By the end of the year,   * The ordered pairs correspond to the terms from two number patterns. * How to generate two numerical patterns using given rules.   III. Possible Misunderstandings:   * Students may not identify a rule that works to describe how number pairs are related. * Students may graph ordered pairs incorrectly, so that the points do not form a straight line when connected.   **Students will be able to...**   * Analyze and explain the relationships between corresponding terms in two numerical patterns. * Graph generated ordered pairs on a coordinate plane. * Graph generated ordered pairs on a coordinate plane using number patterns. * Use a rule to write a sequence of numbers. |

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| **Unit: Number and Operations – Fractions** |
| **Overview:**  • Use equivalent fractions as a strategy to add and subtract fractions.  Apply and extend previous understandings of multiplication and division to multiply and divide fractions.  Time Period: **Second Trimester** Length: **10 weeks** |

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| **STAGE 1 – Desired Results** |

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| **Mathematical Practices**  1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  3. Construct viable arguments and critique the reasoning of others.  4. Model with mathematics.  5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning  Career Ready Practices  CRP4.  Communicate clearly and effectively and with reason.  CRP6. Demonstrate creativity and innovation.  CRP8.  Utilize critical thinking to make sense of problems and persevere in solving them.   |  | | --- | | **New Jersey Student Learning Standards- Mathematics** | |  |  |  | | --- | | **Introduction- Grade 5** | | |  |  | | --- | --- | | MA.5.5.1 | Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.) | |   **Number and Operations – Fractions**   |  |  | | --- | --- | | 5.NF.B.4 | Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. | | 5.NF.B.4a | Interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. | | 5.NF.B.4b | Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. | | 5.NF.B.5 | Interpret multiplication as scaling (resizing), by: | | 5.NF.B.5a | Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. | | 5.NF.B.5b | Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence a/b = (n×a)/(n×b) to the effect of multiplying a/b by 1. | | 5.NF.B.6 | Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem. | | 5.NF.B.7 | Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. | | 5.NF.A | Use equivalent fractions as a strategy to add and subtract fractions. | | 5.NF.B.7a | Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. | | 5.NF.A.1 | Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. | | 5.NF.A.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. | | 5.NF.B.7b | Interpret division of a whole number by a unit fraction, and compute such quotients. | | 5.NF.B | Apply and extend previous understandings of multiplication and division to multiply and divide fractions. | | 5.NF.B.7c | Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. | | 5.NF.B.3 | Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. |   **Cluster A**: **Use equivalent fractions as a strategy to add and subtract fractions**  **Essential Questions…**   * Why does the denominator play an important role when adding and subtracting fractions? * How can we estimate fraction sums and differences? * What are procedures for adding and subtracting fractions and mixed numbers? * How can you use models to add fractions that have different denominators? * How can you use models to subtract fractions that have different denominators? * How can you make reasonable estimates of fraction sums and differences? * How can you rewrite a pair of fractions so that they have a common denominator? * How can you use a common denominator to add and subtract fractions with unlike denominators? * How can you add and subtract mixed numbers with unlike denominators? * How can you use renaming to find the difference of two mixed numbers? * How can you use addition or subtraction to describe a pattern or create a sequence with fractions? * How can the strategy *work backward* help you solve a problem with fractions that involves addition and subtraction? * How can properties help you add fractions with unlike denominators?   **Enduring Understanding…**   * We cannot add or subtract fractions without the whole being the same. * When adding and subtracting fractions, having the same denominator produces the same size parts. * When adding and subtracting fractions with unlike denominators, a common denominator can be made by using equivalent fractions, which keeps the value of each fraction the same.   **Students will know...**  I. Key Vocabulary/Terms: fraction, numerator, denominator, mixed number, benchmark fractions, and equivalent fraction  II. Key Concepts/Ideas: By the end of the year,   * To use visual models as a strategy for finding common denominators. * Visual fraction models and/or equations help us solve and represent word problems. * Benchmark fractions and number sense help us determine the reasonableness of answers.   III. Possible Misunderstandings:   * Students use fraction strips with different denominators to model a sum. * Students drop the whole number when rounding a mixed number. * Students may find the common multiple of the numerators instead of the denominators * Students sometimes rename mixed numbers incorrectly to subtract.   **Students will be able to...**   * Generate equivalent fractions to find the like denominator. * Solve addition and subtraction problems involving fractions (including mixed numbers) with like and unlike denominators using an equivalent fraction strategy. * Solve word problems involving fractions.   **Cluster B**: **Apply & extend understandings of multiplication and division to multiply & divide fractions**  **Essential Questions…**   * Can a product be smaller than its factors? * Why is it important to be able to model multiplication and division of fractions? * What is a unit fraction? * How can you find a fractional part of a group? * How can you use a model to show the product of a fraction and a whole number? * How can you find the product of a fraction and a whole number without using a model? * How can you use an area model to show the product of two fractions? * How does the size of the product compare to the size of one factor when multiplying fractions? * How do you multiply fractions? * How can you use a unit tile to find the area of a rectangle with fractional side lengths? * How does the size of the product compare to the size of one factor when multiplying fractions greater than one? * How do you multiply mixed numbers? * How can you use the strategy *guess, check, and revise* to solve problems with fractions? * How do you divide a whole number by a fraction and divide a fraction by a whole number? * How can the strategy *draw a diagram* help you solve fraction division problems by writing a multiplication sentence? * How does a fraction represent division? * How can you divide fractions by solving a related multiplication sentence? * How can you use diagrams, equations, and story problems to represent division?   **Enduring Understanding…**   * A whole number multiplied by a proper fraction result in a product that is smaller than itself. * A whole number divided by a proper fraction result in a quotient that is larger than itself. * Multiplying a whole number by a fraction involves division, as the product is a fraction of the whole number. * Strategies and models used in whole number multiplication and division can be applied to fractions. * A product can be smaller or larger than its factors.   **Students will know...**  I. Key Vocabulary/Terms: fraction, numerator, denominator, factor, product, equivalent fraction,mixed number, dividend, equation, and quotient  II. Key Concepts/Ideas: By the end of the year,   * A fraction can be represented by division of whole numbers. * Fractional side lengths can be used to find the area of a rectangle. * How to estimate fraction factors. * Multiplication can result in a product that is smaller than one or both of the factors. * Division can result in a quotient that is greater than one or both of the inputs. * Division of whole numbers by fractions and division of fractions by whole numbers relate to multiplication.   III. Possible Misunderstandings:   * Students may confuse the numerator and the denominator when making equal groups. * Students may incorrectly circle 2/3 of one, not 2/3 of the whole, when using fraction strips to model. * When multiplying a whole number and a fraction, students may multiply the whole number by the denominator of the fraction. * Students reverse the dividend and the divisor when writing a division problem to represent a real-world situation. * Students may write an incorrect multiplication expression.   **Students will be able to...**   * Use fractions to represent division of whole numbers such as 5 ÷ 4 = 5/4. * Locate and place fractions on a number line. * Multiply fractions by whole numbers. * Use compatible numbers to round and estimate multiplication and division of fractions. * Use the standard algorithm to multiply two fractions (a/b x c/d = (a x c) / (b x d)). * Apply unit squares to represent multiplication of fractions and area rectangles. * Multiply mixed numbers by converting factors to improper fractions. * Compare the product and one given fractional factors to estimate the unknown factor. * Divide whole numbers by fractions using the standard algorithm. * Model division of fractions by whole numbers and division of whole numbers by fractions with manipulatives such as fraction model strips, circle patterns, or graph paper. |

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| **Unit: Geometry** |
| **Overview:**  • Graph points on the coordinate plane to solve real-world and mathematical problems.  • Classify two-dimensional figures into categories based on their properties.  Time Period: **Third Trimester** Length: **3 weeks** |

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| **STAGE 1 – Desired Results** |

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| **Mathematical Practices**  1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  3. Construct viable arguments and critique the reasoning of others.  4. Model with mathematics.  5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning  Career Ready Practices  CRP4.  Communicate clearly and effectively and with reason.  CRP6. Demonstrate creativity and innovation.  CRP8.  Utilize critical thinking to make sense of problems and persevere in solving them.   |  | | --- | | **New Jersey Student Learning Standards- Mathematics** | |  |  |  | | --- | | **Introduction- Grade 5** | | |  |  | | --- | --- | | MA.5.5.3 | Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1- unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems. | |   **Geometry**   |  |  | | --- | --- | | 5.G.A | Graph points on the coordinate plane to solve real-world and mathematical problems. | | 5.G.A.1 | Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). | | 5.G.A.2 | Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. | | 5.G.B | Classify two-dimensional figures into categories based on their properties. | | 5.G.B.3 | Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. | | 5.G.B.4 | Classify two-dimensional figures in a hierarchy based on properties. | | 5.G.A | Graph points on the coordinate plane to solve real-world and mathematical problems. | | 5.G.A.1 | Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate). | | 5.G.A.2 | Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. | | 5.G.B | Classify two-dimensional figures into categories based on their properties. | | 5.G.B.3 | Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. | | 5.G.B.4 | Classify two-dimensional figures in a hierarchy based on properties. | | 5.G.A | Graph points on the coordinate plane to solve real-world and mathematical problems. |   **Cluster A**: **Graph points on the coordinate plane to solve real-world and mathematical problems**  **Essential Questions…**   * How are points plotted? * How are relationships shown on a graph? * What is the coordinate system and how can we use it to solve problems? * How can you identify and plot points on a coordinate grid? * How can you use a coordinate grid to display data collected in an experiment? * How can you use a line graph to display and analyze real-world data?   **Enduring Understanding…**   * The coordinate system consists of an origin, axes, and coordinates that are used to represent and interpret real world situations.   **Students will know...**  I. Key Vocabulary/Terms: x-axis, y-axis, ordered pair, origin, quadrants, points, and coordinate plane  II. Key Concepts/Ideas: By the end of the year,   * There is a specific way to place ordered pairs on a coordinate plane. * The relationship between ordered pairs and the x- and y-axis on the coordinate plane. * A pattern will help you generate points on the coordinate plane.   III. Possible Misunderstandings:   * Students write ordered pairs in the form (y,x) instead of (x,y). * Students reverse the ordered pairs when plotting points. * Students may have difficulty when one coordinate in an ordered pair is a word rather than a number.   **Students will be able to...**   * Identify points on a coordinate plane. * Define the coordinate system. * Identify the x- and y-axis. * Locate the origin on the coordinate plane. * Identify the coordinates of a point on a coordinate plane. * Recognize and describe the connection between the ordered pair and the x- and y-axis from the origin. * Graph points in the first quadrant. * Interpret coordinate values of points in real world context and mathematical problems. * Represent real world and mathematical problems by graphing points in the first quadrant.   **Cluster B**: **Classify two-dimensional figures into categories based on their properties**  **Essential Questions…**   * How can two-dimensional figures be grouped by their properties? * Can a two-dimensional figure be classified in more than one category? * How can you identify and classify polygons? * How can you classify triangles? * How can you classify and compare quadrilaterals?   **Enduring Understanding…**   * A hierarchy of two-dimensional figures can be constructed to reflect the similarities and differences of figures based on their properties.   **Students will know...**  I. Key Vocabulary/Terms: congruent, heptagon, nonagon, polygon, regular polygon, decagon, hexagon, pentagon, quadrilateral, triangles (equilateral, iscocleses, scalene), acute, obtuse, right, parallel lines, parallogram, perpendicualar line, rectangle, rhombus, trapezoid  II. Key Concepts/Ideas: By the end of the year,   * That attributes determine into which categories two-dimensional shapes can be classified. * If a two-dimensional shape is classified into a category, it belongs to all subcategories of that category. * How to analyze and relate categories of two-dimensional and three-dimensional shapes based on their properties.   III. Possible Misunderstandings:   * Students may incorrectly name a polygon. * Students do not classify triangles correctly. * Students may not classify quadrilaterls in as many different ways as possible.   **Students will be able to...**   * Identify and draw two-dimensional shapes. * Classify two-dimensional shapes based on their attributes. |

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| **Unit: Measurement and Data** |
| **Overview:**  • Convert like measurement units within a given measurement system.  • Represent and interpret data.  • Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.  Time Period: **Third Trimester** Length: **4 weeks** |

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| **STAGE 1 – Desired Results** |

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| **Mathematical Practices**  1. Make sense of problems and persevere in solving them.  2. Reason abstractly and quantitatively.  3. Construct viable arguments and critique the reasoning of others.  4. Model with mathematics.  5. Use appropriate tools strategically.  6. Attend to precision.  7. Look for and make use of structure.  8. Look for and express regularity in repeated reasoning  Career Ready Practices  CRP4.  Communicate clearly and effectively and with reason.  CRP6. Demonstrate creativity and innovation.  CRP8.  Utilize critical thinking to make sense of problems and persevere in solving them.   |  | | --- | | **New Jersey Student Learning Standards- Mathematics** | |  |  |  | | --- | | **Introduction- Grade 5** | | |  |  | | --- | --- | | MA.5.5.3 | Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1- unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems. | |   **Measurement and Data**   |  |  | | --- | --- | | 5.MD.A | Convert like measurement units within a given measurement system. | | 5.MD.A.1 | Convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. | | 5.MD.B | Represent and interpret data. | | 5.MD.B.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. | | 5.MD.C | Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition. | | 5.MD.C.5b | Apply the formulas V = l × w × h and V = B × h for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems. | | 5.MD.C.3 | Recognize volume as an attribute of solid figures and understand concepts of volume measurement. | | 5.MD.C.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. | | 5.MD.C.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.C.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.C.4 | Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and non-standard units. | | 5.MD.C.5 | Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume. | | 5.MD.C.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. |   **Cluster A**: **Convert like measurement units within a given measurement system**  **Essential Questions…**   * What are customary measurement units and how are they related? * What are metric measurement units and how are they related? * Why is it important to convert measurement units in a given measurement system? * How can you compare and convert customary units of length? * How can you compare and convert customary units of capacity? * How can you compare and convert customary units of weight? * How can you solve multi-step problems that include measurement conversions? * How can you compare and convert metric units? * How can you use the strategy *make a table* to help you solve problems about customary and metric conversions? * How can you solve elapsed time problems by converting units of time?   **Enduring Understanding…**   * Recognize units of measurement within the same system and how they relate. * A measurement can be converted to a different unit with the two measurements representing the same amount.   **Students will know...**  I. Key Vocabulary/Terms: convert, metric system, customary system, foot, inch, mile, yard, gallon, pint, ounce, weight, liter, and meter  II. Key Concepts/Ideas: By the end of the year,   * How the base ten number system supports conversions within the metric system. * To increase precision in using customary and metric terms.   III. Possible Misunderstandings:   * Students choose the wrong operation to convert measurements. * Students do not make all the conversions needs to solve a multi-step measurement problem. * Students read a conversion table incorrectly. * Students mix up A.M. and P.M. when finding elapsed time.   **Students will be able to...**   * Solve multi-step real-world problems that involve conversions within the same measurement systems. * Divide and multiply to change units within the same measurement system.   **Cluster B**: **Represent and interpret data**  **Essential Questions…**   * How can line plots be used to represent data and answer questions? * How can a line plot help you find an average with data given in fractions?   **Enduring Understanding…**   * Line plots can be helpful when analyzing data, including measurement data.   **Students will know...**  Key Vocabulary/Terms: line plot, length, data, and scale  II. Key Concepts/Ideas: By the end of the year,   * Benchmark fractions. * How to measure objects up to 1/8 of a unit.   III. Possible Misunderstandings:   * Students may not perform division of fractions correctly. This causes data recording errors on line plots.   **Students will be able to...**   * Solve word problems using data plotted on a line plot. * Create a line plot to display data. * Plot a set of data (in fractions) on a line plot.   **Cluster C**: **Understands concepts of volume and relate volume to multiplication and to addition**  **Essential Questions…**   * What is the meaning of the volume of a solid? * What are the attributes of an object that has volume? * How can the volume of three-dimensional shapes be found? * How can you identify, describe, and classify three-dimensional figures? * What is a unit cube and how can you use it to build a solid figure? * How can you use unit cubes to find the volume of a rectangular prism? * How can you use an everyday object to estimate the volume of a rectangular prism? * How can you find the volume of a rectangular prism? * How can you use a formula to find the volume of a rectangular prism? * How can you use the strategy *make a table* to compare different rectangular prisms with the same volume? * How can you find the volume of rectangular prisms that are combined?   **Enduring Understanding…**   * Volume is measured in cubic units. * Volume is determined by the amount of cubic units that fit into a three-dimensional object. * The formula for calculating volume of a rectangular prism is directly connected to its physical shape.   **Students will know...**  I. Key Vocabulary/Terms: cubic units, height, and length  II. Key Concepts/Ideas: By the end of the year,   * Volume has an attribute of three-dimensional space. * Volume can be measured by finding the total number of same-sized units of volume required to fill the space without gaps or overlaps.   III. Possible Misunderstandings:   * Students may incorrectly count the number of faces and not the number of unit cubes used to build each solid figure. * Students may confuse lateral faces with bases. * Students may incorrectly estimate the volume by multiplying the volume of an object by the number of objects in the base and not by the entire container. * Students may incorrectly find the volume as the measure of one layer of the rectangular prism. * Students may confuse the units for linear measurement, area, and volume. * Students may not include all dimensions when given the volume and two dimensions. * Students may not find all of the arrangements of factors whose product equals the given volume. * Students may incorrectly identify dimensions of rectangular prisms in composite figures.   **Students will be able to...**   * Find the number of cubes that cover the base of a three-dimensional figure and use this measurement and the height to determine the volume of the object. * Find the volume of a drawn three-dimensional rectangular prism using the formula L x W x H * Build various rectangular prisms with a certain number of cubes and compare the objects that have the same volume. |

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| **STAGE 2 – Evidence of Learning** |

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| **Formative Activities, Tasks, or Projects:**   * Oral or written responses to the essential questions. * Materials produced as a result of class discussion or activities. * Using discipline vocabulary in appropriate context. * Quiz or test on information relevant to the unit. * 3-Minute Pause * Observation * Choral Response * Debriefing * Exit Card / Ticket * Hand signals * Inside-Outside Circle Discussion (Fishbowl) * Misconception Check * Questions and Answers * Quiz * Self-Assessment * Student Conference * Think-Pair-Share * Web or Concept Map   **Summative Activities, Tasks, or Projects:**   * Chapter Tests * Edmentum Beginning of Year Assessment * Edmentum Middle of Year Assessment * Edmentum End of Year Assessment * District Mandated Tasks   **Authentic Assessment Suggestions**   * Performance Tasks * District Mandated Tasks |

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| **STAGE 3 – Learning Plan** |

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| **Instructional Map**  **Step 1: What is it we want and expect students to learn?**   * Read domain overview, learning goal, and essential questions to gain an initial understanding of the domain. * Analyze cluster of standards, vertical progression, test item specifications to determine full intent of standards (DOK) and student outcomes. * Determine measurable objectives using unpacked standards. Review the assessments for determining acceptable evidence.   **Step 2: How will they learn it?**   * Select problem-based learning/formative assessment tasks. * Develop learning experiences utilizing the textbook and selected tasks along with higher order questions stems.   **Step 3: How will we know when they have learned it?**   * Analyze students’ work reflecting on teacher practice and provide student feedback. * Provide additional assessments as necessary and collaboratively analyze the results.   **Step 4: How will we respond if they don’t learn it? How will we respond to those who already know it?**   * Using data analysis, develop small groups for remediation and enrichment.   Reassess student performance and provide opportunities for application.  **Unit Specific Accommodations and Modifications**  Gifted and Talent Accommodations and Modifications:   * Increase the level of complexity * Decrease scaffolding * Variety of finished products * Allow for greater independence * Learning stations, interest groups * Flexibility in assignments * Strategy and flexible groups based on formative assessment or student choice * Acceleration within a unit of study * Exposure to more advanced or complex concepts, abstractions, and materials * After mastery of a unit, provide students with more advanced learning activities, not more of the same activity   English Language Learners, Special Education, and At-Risk Accommodations and Modifications:  ELL Students:   * Remove unnecessary materials, words, etc., that can distract from the content * Provide appropriate scaffolding * Limit the number of steps required for completion * Tiered centers, assignments, lessons, or products * Deliver the content in “chunks” * Use technology, if available and appropriate * Differentiate homework and products * Define key vocabulary, multiple-meaning words, and figurative language * Use audio and visual supports, if available and appropriate * Meet with small groups to reteach idea/skill * Allow students to work at their own pace * Presenting ideas through auditory, visual, kinesthetic, & tactile means * Role play * Strategy and flexible groups based on formative assessment   Special Education Students:   * Remove unnecessary material, words, etc., that can distract from the content * Provide appropriate scaffolding * Tiered centers, assignments, lessons, or products * Deliver the content in “chunks” * Use technology, if available and appropriate * Varied questioning strategies * Provide background knowledge * Use audio and visual supports, if available and appropriate * Provide multiple learning opportunities to reinforce key concepts and vocabulary * Meet with small groups to reteach idea/skill * Present ideas using auditory, visual, kinesthetic, & tactile means * Strategy and flexible groups based on formative assessment * Differentiated checklists and rubrics, if available and appropriate   Differentiation Strategies for At Risk Students:   * Remove unnecessary materials, words, etc., that can distract from the content * Provide appropriate scaffolding * Limit the number of steps required for completion * Gradually increase the level of independence required * Tiered centers, assignments, lessons, or products * Deliver the content in “chunks” * Use technology, if available and appropriate * Varied questioning strategies * Provide background knowledge * Use audio and visual supports, if available and appropriate * Provide multiple learning opportunities to reinforce key concepts and vocabulary * Meet with small groups to reteach idea/skill * Presenting ideas through auditory, visual, kinesthetic, & tactile means * Strategy and flexible groups based on formative assessment   **504 Plans**  Students can qualify for 504 plans if they have physical or mental impairments that affect or limit any of their abilities to:   * communicate, see, hear, or speak * read, concentrate, think, or learn * stand, bend, lift, or work   Examples of accommodations in 504 plans include:   * preferential seating * extended time on tests and assignments * verbal, visual, or technology aids * modified textbooks or audio-video materials * behavior management support * verbal testing * excused lateness, absence, or missed classwork * pre-approved nurse's office visits and accompaniment to visits   **Differentiation**   |  |  |  |  | | --- | --- | --- | --- | | **High-Achieving Students** | **On Grade Level Students** | **Struggling Students** | **Special Needs/ELL** | | * Into Math Challenge * Into Math Challenge * Game and Activity Cards * Small Group Mini Lesson: Ready For More * Unit Project Cards * STEM Task * Centers | * Into Math Reteach * Game and Activity Cards * Small Group Mini Lesson: On Track * Unit Project Cards * STEM Task * Centers | * Into Math Reteach * Game and Activity Cards * Small Group Mini Lesson: Almost There * Unit Project Cards * Interactive Tiers * STEM Task * Centers | * Into Math Reteach * Game and Activity Cards * Small Group Mini Lesson * Unit Project Cards * Tier 3 Intensive Intervention * Multilingual Glossary * STEM Task * Centers |  |  |  | | --- | --- | | Instructional Best Practices | | | **Required Best Practices**   * Use of Mathematical Vocabulary * Lesson Closure * Effective Questioning Techniques * Math Centers * Small Group Mini Lessons * Concrete-Pictorial- Abstract * Use of manipulatives | **Suggested Best Practices**   * Peer Collaboration * Think Aloud * Gallery Walks |   **Unit Specific Interdisciplinary Connections / Materials**  With interdisciplinary instruction, the subject areas are woven together and explored through an overarching theme or concept. We use math to help us solve everyday problems in the kitchen, in the garden, and for many of us at our jobs.    Brain research has shown that information in our brains is organized in schematic structures. These structures are made up of interconnected bits of information and serve as a framework for the knowledge we acquire. When a learner’s knowledge is connected, it is much more likely that they will apply the prior knowledge to a wide variety of new situations. They will acquire new information in a way that is more accessible and will be better able to relate it to previously acquired knowledge.    Students learn about patterns in math, science, social studies, and even literature. Because of this, they are much more likely to “see” these patterns when they encounter new situations. Since patterns are not only studied in math they are able to make the connection and gain the understanding that patterns can be found in many areas of their lives.  Interdisciplinary instruction allows students to understand the interconnectedness of the disciplines and makes learning more meaningful and relevant as fascinating connections are made across the subject areas.  **Science:**  **Patterns**   * Similarities and differences in patterns can be used to sort, classify, communicate and analyze simple rates of change for natural phenomena. (5- ESS1-2)   **Social Studies:**  6.1.2.CivicsPD.1: Engage in discussions effectively by asking questions, considering facts, listening to the ideas of others, and sharing opinions.  6.1.2.CivicsPR.3: Analyze classroom rules and routines and describe how they are designed to  benefit the common good.  6.1.2.CivicsPR.4: Explain why teachers, local community leaders, and other adults have a  responsibility to make rules that are fair, consistent, and respectful of individual rights.  6.1.5.CivicsPR.1 Compare procedures for making decisions in a variety of settings including classroom, school, government, and /or society.  6.1.5.HistoryUP.7: Describe why it is important to understand the perspectives of other cultures in an interconnected world.  **Language Arts:**  NJSLSA.R1. Read closely to determine what the text says explicitly and to make logical inferences and relevant connections from it; cite specific textual evidence when writing or speaking to support conclusions drawn from the text.  RL.5.1. Quote accurately from a text, and make relevant connections when explaining what the text says explicitly and when drawing inferences from the text.  NJSLSA.W5. Develop and strengthen writing as needed by planning, revising, editing, rewriting, or trying a new approach. |

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| **Additional Materials** |

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| Digital Resources   * Use the following resources on HMH Ed: Tier 1,2,3 Intervention, Response to Intervention, Vocabulary Games for each Chapter, iTools, Interactive Reteach, Interactive Challenge, Interactive Lessons, Interactive Module Practice * Prodigy, Edmentum, and Online Games   <https://achievethecore.org/>  <https://resources.newmeridiancorp.org/math-test-design/>  <https://www.state.nj.us/education/cccs/2016/math/>  <https://achievethecore.org/content/upload/Add%20Subtract%20Situation%20Types.pdf>  (Common Addition and Subtraction Situations)  <https://achievethecore.org/content/upload/Mult%20Div%20Situation%20Types.pdf>  (Common Multiplication and Division Situations)  [https://illuminations.nctm.org](https://illuminations.nctm.org/)  <https://www.state.nj.us/education/modelcurriculum/>  <http://archive.dimacs.rutgers.edu/nj_math_coalition/framework.html>  <https://parcc-assessment.org/released-items/>  <https://linden.instructure.com/courses/3955> | Printed Resources  Into Math Student Book  Practice and Homework Journal  Tools for Thoughtful Assessment  Math Tools |