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SUGGESTED

**INSTRUCTIONAL**

**PLANNING GUIDE**

*for the Mississippi College- and Career-Readiness Standards*

**q Mathematics**

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| **Grade 4** |

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**INTRODUCTION**

The unprecedented, nationwide school closures in the spring of 2020 due to the COVID-19 pandemic have created a shift in how districts plan for school re-entry. Instead of the traditional brick-and-mortar planning, administrators are now identifying models that will support a variety of instructional delivery scenarios as they plan for school reopening. The traditional methods of planning and delivery are nearly impossible to implement as a stand-alone model; instead, innovative educators are developing and identifying strategies and resources to support a variety of distance learning scenarios as part of their plans. When using new models of delivery, it is important to recognize that the traditional approach to remediation—providing work better suited for earlier grades—may be insufficient. Instead, the conventional approach to remediation will likely compound the problem educators are trying to correct. According to a 2018 study, [The Opportunity Myth[[1]](#footnote-2)](https://tntp.org/assets/documents/TNTP_The-Opportunity-Myth_Web.pdf), the approach of “meeting students where they are”, while often well-intended, only widens the achievement gap. Instead of remediation, teachers and administrators are encouraged to look toward acceleration methods to support student growth and close the gaps.

**PURPOSE**

The purpose of the *Suggested Mississippi College- and Career-Readiness Standards Instructional Planning Guides* is to provide a *SUGGESTED* guide to assist teachers in planning rigorous, coherent lessons that focus on the critical content of each grade level. Providing curriculum guidance through intentional standard grouping and consideration for the time needed to address different objectives, should encourage consistent instruction that fully aligns to the Mississippi College- and Career-Readiness Standards. The use of this guide can also foster collaborative planning across schools and districts throughout the state.

**DEVELOPMENT**

The following planning and subsequent grouping of standards were determined through a collaborative process among state-level content specialists. By connecting standards through common conceptual understandings and relationships, the expectation is that conceptual connections will promote a cohesive process and avoid the teaching of standards in isolation. Additionally, it promotes a deeper understanding and a more authentic acquisition of mathematical knowledge and skills. The Standards for Mathematical Practices (SMPs) presented are those suggested to be highlighted within the respective standard; however, this does not exclude the inclusion of other SMPs. The standards determined as “**priority**” have been bolded and are standards identified as critical to the mastery of other standards. A standard’s “**priority**” status does *NOT* have a direct correlation with test item frequency. Additionally, some standards may appear multiple times throughout the course with a portion of the standard highlighted to depict that only that portion of the standard is to be taught within that unit.

**RESOURCES FOR CONSIDERATION**

The resources listed below may be referenced to support classroom teachers in the development of lesson plans and instruction at the local level. This list is not meant to be exhaustive, rather it represents consultative resources that align with the Units/Themes provided in the Instructional Planning Guides. Educators are encouraged to use these resources in addition to those curriculum materials that meet the needs of the students they serve.

| High-Quality Instructional Materials (HQIM) | Instruction and Planning Resources | Standards for Mathematical Practices (SMPs) | Assessment  Resources | Professional Development |
| --- | --- | --- | --- | --- |
| * [MS HQIM Defined](https://mdek12.org/HQIM) * [MS Adopted HQIM (Textbooks)](https://www.mdek12.org/caravan2019) * [enVision Mathematics 2020 Correlation to the MS CCRS K-5](https://assets.savvas.com/correlations/MS_2016_enVMS2020_K-5.pdf?_ga=2.245827716.1280125487.1593455317-1093477658.1593035292) * [MHE My Math Learning Solution](https://s3.amazonaws.com/ecommerce-prod.mheducation.com/unitas/school/explore/sites/mymath/mcgraw-hill-my-math-learning-solution.pdf) * [Great Minds (Eureka Math) Teacher Resource Pack](https://eurekamath.greatminds.org/teacher-resource-pack) * [Great Minds Alignment to MSCCRS](https://greatminds.org/resources/products/mississippi-standards-alignment-study) | * [Achieve the Core Coherence Map-4](https://achievethecore.org/coherence-map/4)[th](https://achievethecore.org/coherence-map/4) [Grade Math](https://achievethecore.org/coherence-map/4) * [Standards Dependency and Flow View](http://jeffbaumes.github.io/standards/) * *Scaffolding Instruction for ELLs* * [Achieve the Core CCR Shifts in Mathematics](https://achievethecore.org/content/upload/SAP_ShiftsAtAGlance_02.pdf) * [Standards Progressions for Mathematics Progression Documents](http://ime.math.arizona.edu/progressions/) * [[SFUSD Manipulatives List](https://districtaccess.mde.k12.ms.us/curriculumandInstruction/Mathematics%20Resources/Recommended%20Math%20Manipulatives/Recommended%20Manipulatives%20for%20CCSS%20Grades%203-5%20by%20Standard.pdf)](http://www.sfusdmath.org/manipulatives.html) * [[Printable Manipulatives](https://districtaccess.mde.k12.ms.us/curriculumandInstruction/Mathematics%20Resources/Recommended%20Math%20Manipulatives/Recommended%20Manipulatives%20for%20CCSS%20Grades%203-5%20by%20Standard.pdf)](https://www.mathematicalpractices.com/mp1e/content/printable-manipulatives/) * [SFUSD Manipulatives List](http://www.sfusdmath.org/manipulatives.html) * [Printable Manipulatives](https://www.mathematicalpractices.com/mp1e/content/printable-manipulatives/) * [Achieve the Core Instructional Practice Guide K-8](https://achievethecore.org/category/1155/printable-versions) * [Mississippi Exemplar Units and Lesson Plans-Grade 4 Math](https://www.mdek12.org/sites/default/files/documents/OAE/OEER/Exemplar%20Units/math/4th-Grade-Exemplar-Unit.pdf) * [Mississippi CCRS Exemplar Lesson Plans](https://mdek12.org/ESE/math/lesson-plans) * [HCPSS Family Mathematics Support Center-Grade 4](https://hcpss.instructure.com/courses/34430/pages/grade-4-star-mathematics-overview) * [MS CCRS Scaffolding Documents](https://mdek12.org/ese/ccr) * [Access for All Guidance](https://mdek12.org/sites/default/files/documents/OAE/OAE/2019-access-for-all-guide.pdf) * [MDE Family Guides for Student Success](https://mdek12.org/OAE/OEER/FamilyGuidesEnglish)\*   (Alternative Language: [Spanish](https://mdek12.org/OAE/OEER/FamilyGuidesSpanish))  *\*This resource can be used for standards reinforcement of previous grades.* | * [Illustrative Mathematics Understanding the Standards for Mathematical Practices (SMPs)](http://tasks.illustrativemathematics.org/practice-standards/) * [Inside Mathematics Mathematical Practice Standards](https://www.insidemathematics.org/common-core-resources/mathematical-practice-standards) * [Inside Mathematics Mentors of Mathematical Practice](https://www.insidemathematics.org/common-core-resources/mentors-of-mathematical-practice) | * [MS MAAP Program](https://mdek12.org/OSA/MAAP) * [MS MAAP-A Program](https://mdek12.org/OSA/SP/MAAP-A) * [MS MAAP Mathematics Resources](https://districtaccess.mde.k12.ms.us/studentassessment/Public%20Access/Forms/AllItems.aspx?RootFolder=%2Fstudentassessment%2FPublic%20Access%2FStatewide%5FAssessment%5FPrograms%2FMAAP%2DMississippi%20Academic%20Assessment%20Program%2FMath%5FGuidance) * [Inside Mathematics Performance Tasks 2-HS](https://www.insidemathematics.org/performance-assessment-tasks) * [Illustrative Mathematics Grade 4 Tasks](http://tasks.illustrativemathematics.org/content-standards/4) * [Goalbook Pathways Grade 4](https://goalbookapp.com/pathways/?ref=topic" \l "!/browse-topics/math/3) * [Khan Academy Grade 4](https://www.khanacademy.org/math/cc-third-grade-math) | * [MDE Professional Development Resources](https://www.mdek12.org/OPD/home) * [MARS Prototype Professional Development Modules](https://www.map.mathshell.org/pd.php) * [NCTM Professional Development Resources](https://www.nctm.org/Conferences-and-Professional-Development/Professional-Development-Resources/) * [Inside Mathematics Classroom Videos](https://www.insidemathematics.org/classroom-videos) * [NCTM Math Forum](https://www.nctm.org/tmf/mathed/mathed.research.new.html) * [Great Minds (Eureka) Webinars](https://eurekamath.greatminds.org/webinar-library) * [Using Manipulatives in the Classroom](https://www.teachervision.com/professional-development/using-manipulatives) |
| Applets, Demos, Interactives, and Virtual Manipulatives | | | | |
| * [CPM Tiles](https://technology.cpm.org/general/tiles/) * [Didax Virtual Manipulatives](https://www.didax.com/math/virtual-manipulatives.html) * [Didax Free Activity Guides for Virtual Manipulatives](https://www.didax.com/virtual-manipulatives-activities) * [GeoGebra Virtual Manipulatives](https://www.geogebra.org/m/NPDu3rCm) * [Houghton Mifflin and Harcourt iTools](https://www-k6.thinkcentral.com/content/hsp/math/hspmath/na/common/itools_int_9780547584997_/main.html) * [Math Playground Math Manipulatives](https://www.mathplayground.com/math_manipulatives.html) * [McGraw Hill (Glencoe) Virtual Manipulatives](http://www.glencoe.com/sites/common_assets/mathematics/ebook_assets/vmf/VMF-Interface.html) * [The Math Learning Center Math Apps](https://www.mathlearningcenter.org/apps) * [Toy Theatre Virtual Manipulatives](https://toytheater.com/category/teacher-tools/virtual-manipulatives/) * [Visnos Mathematical Demonstrations](https://www.visnos.com/demos) | | | | |

| **TERM 1**  **UNIT OF STUDY**  (REAL-WORLD APPLICATION) **q** | **MS CCR STANDARDS q** | **STANDARDS FOR MATHEMATICAL  PRACTICE (SMPs) q** | CORE ACADEMIC **VOCABULARY TERMS q** |
| --- | --- | --- | --- |
| **Unit 1: Understanding Place Value** (Students use place value knowledge to understand the value of base-10 numeral. This is foundational for working with base-10 fractions, decimals, and powers of 10) | **4.NBT.1 Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right.*For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division*. \*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. | Base-10  Digit  Place Value |
|  | | **4.NBT.2 Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. \*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. | Base-10  Base-10 Numeral  Compare  Equal To (=)  Extended Form  Greater Than (>)  Less Than (<)  Standard Form |
| **Unit 2: Place Value and the Standard Algorithm** (Students expand knowledge of addition and place value to solve addition and subtraction problems using the standard algorithm.) | | **4.NBT.4 Fluently add and subtract multi-digit whole numbers using the standard algorithm. \*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Add  Addends  Addition  Algorithm  Difference  Hundreds  Ones  Place Value  Regroup  Subtract  Subtraction  Sum  Tens  Thousands |
| **Unit 3: Using Place Value to Round** (Students build on knowledge from grades K-3 of understanding the values of numbers based on place value of the digits. Using this understanding, students learn to round, which develops the skill of estimation.) | | **4.NBT.3 Use place value understanding to round multi-digit whole numbers to any place. \*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 6** Attend to precision. | Place Value  Round  Whole Number |
| **Unit 4: Classifying Two-Dimensional Figures** (As a foundational skill to Geometry, building from K-3, students classify two-dimensional figures with a focus on triangles.) | | 4.G.2 Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles. | * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. | Absence  Angle  Parallel  Perpendicular  Presence  Right Triangle  Two-Dimensional Figure |
| **Unit 5: Symmetry**  (Students learn the foundations of similar and congruent figures while working with symmetry. Symmetry is often found in the creative arts field of careers.) | | 4.G.3 Recognize a line of symmetry for a two-dimensional figure as a line across the figure, such that, the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. | * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. | Line of Symmetry  Line Symmetry  Symmetry |
| **Unit 6: Angles** (Students learn the composition of angles, how to classify, draw, measure, and add angles. This is a foundational skill for 7th grade, HS Geometry, and Trigonometry.) | | 4.G.1 Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. | * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. | Acute Angle  Angles  Endpoint  Line  Line Segment  Obtuse Angle  Parallel Line  Perpendicular Line  Point  Ray  Right Angle  Two-Dimensional Figure |
|  | | 4.MD.5 Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:  4.MD.5a an angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.  4.MD.5b An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees. | * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. | Angle  Degree  Endpoint  Line Segment  Ray |
|  | | 4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. | Angle  Angle Measure  Degree  Protractor |
|  | | 4.MD.7 Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure. | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 6** Attend to precision. | Angle  Angle Measure  Compose  Decompose  Degree  Difference  Sum  Symbol  Unknown Angle Measure |

| **TERM 2**  **UNIT OF STUDY**  (REAL-WORLD APPLICATION) **q** | **MS CCR STANDARDS q** | **STANDARDS FOR MATHEMATICAL  PRACTICE (SMPs) q** | CORE ACADEMIC **VOCABULARY TERMS q** |
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| **Unit 7: Multiplying up to 4-digit by 2-digit**  (Using arrays, area models, groups, number patterns, properties, and place value, students make the connection of multiplying multi-digit numbers.) | **4.NBT.5 Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. \*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Area Model  Arrays  Dividend  Division  Divisor  Equal Groups  Equation  Factor  Multiplication  Product  Quotient  Remainder  Unknown Number |
| **Unit 8: Dividing up to 4-digit by 1-digit with Remainders** (Using arrays, area models, groups, number patterns, properties, and place value, students make the connection of division being the opposite operation of multiplication.) | **4.NBT.6 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. \*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Area Model  Arrays  Dividend  Division  Divisor  Equal Groups  Equation  Multiplication  Quotient  Remainder  Unknown Number |
| **Unit 9: Comparative Multiplication** (Students use their knowledge of multiplication to compare it to real world scenarios to create a multiplication equation. This is foundational for writing expression from a given context.) | **4.OA.1 Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. | Factor  Factor Pair  Multiple  Multiplication  Multiplication Equation  Product |
|  | **4.OA.2 Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. \*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Dividend  Divisor  Factor  Fluently  Number Property  Product  Remainder  Quotient  Unknown Quantity  Variable |
| **Unit 10: Perimeter and Area**  (Students extend on their developed understanding of perimeter and area to compose a formula that will solve for the given measurement. This skill is used in architecture, carpentry, and other mathematical and engineering fields.) | 4.MD.3 Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor*. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. | Area  Equation  Formula  Length  Perimeter  Side  Unknown Factor  Width |
| **Unit 11: Number Patterns and Measurement Systems** (Students learn to follow rules within mathematics to complete a table or find the unknown number. This skill is foundational for multiple advanced math skills such as functions.) | 4.OA.5 Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way*. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Number Pattern  Pattern Rule  Shape Pattern |
| (Students expand their knowledge of measurement from grade three to conversions within a measurement system. They learn that to convert within a measurement system, a number pattern or rule is used. This is a life skill that students will need when determining appropriate measurements, e.g. milliliters or a liter; ounces, pint, quart, or gallon of milk.) | 4.MD.1 Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb., oz.; l, ml; hr., min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), ...* | * **SMP 2** Reason abstractly and quantitatively. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. | Centi-  Conversion Table  Gram  Kilo-  Meter  Milli-  Minute  Ounce  Pound  Second |
| **Unit 12: Solving Problems with the Four Operations** (After building an understanding of addition, subtraction, multiplication, and division, students relate their computational skills to solving word problems where they apply the computation to its appropriate context. This is foundational for relating mathematics concepts to real-world context to solve problem.) | **4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. | Addition  Division  Equation  Estimation  Multiplication  Remainder  Rounding  Subtraction  Unknown Quantity  Variable |
|  | 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. | Addition  Decimal  Division  Fraction  Larger Unit  Multiplication  Smaller Unit  Subtraction  Unit |

| **TERM 3**  **UNIT OF STUDY**  (REAL-WORLD APPLICATION) **q** | **MS CCR STANDARDS q** | **STANDARDS FOR MATHEMATICAL  PRACTICE (SMPs) q** | CORE ACADEMIC **VOCABULARY TERMS q** |
| --- | --- | --- | --- |
| **Unit 13: Prime vs Composite**  (As students build fluency with basic multiplication facts, they will determine some products are prime and others are composite, this concept is foundational for operations with division, fractions, and later understanding more complex skills in Algebra.) | 4.OA.4 Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 7** Look for and make use of structure. | Composite  Factor  Factor Pair  Multiple  Multiplication  Prime  Product |
| **Unit 14: Comparing and Ordering Fractions** (Students relate the skill of comparing and ordering whole numbers to that of comparing and ordering fractions. This is foundational to understanding fractional values and operations with rational numbers.) | **4.NF.1 Explain why a fraction *a*/*b* is equivalent to a fraction (*n* × *a*)/(*n* × *b*) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. \*\*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Denominator  Equivalent Fraction  Fraction |
|  | **4.NF.2 Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model. \*\*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Benchmark Fraction  Common Denominator  Conclusion  Denominator  Equal To (=)  Fraction  Greater Than (>)  Hundredths  Justify  Less Than (<)  Numerator  Place Value  Tenths  Visual Model |
| **Unit 15: Base-10 Fractions and Decimal Notation** (Introduction of decimal notation and its relation to place value and fractions. This is foundational for operations with rational numbers.) | **4.NF.5 Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.\*\*\*\* *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100*. \*\*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Base-10 Fraction Equivalent Fraction |
|  | **4.NF.6 Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram*. \*\*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Decimal  Decimal Notation  Decimal Point  Fraction  Hundredths  Place Value  Tenths  Visual Model |
|  | **4.NF.7 Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model. \*\*\*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 7** Look for and make use of structure. | Decimal  Decimal Point  Equal To (=)  Greater Than (>)  Hundredths  Less Than (<)  Place Value  Tenths  Visual Model |
| **Unit 16: Adding and Subtracting Fractions** (Introduction of addition and subtraction of fractions, students relate the skill of adding and subtracting whole numbers to adding and subtracting fractions. This is foundational to operations with rational numbers.) | **4.NF.3 Understand a fraction *a*/*b* with *a* > 1 as a sum of fractions 1/*b*. \*\*\***  **4.NF.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.**  **4.NF.3b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8*.**  **4.NF.3c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.**  **4.NF.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Compose  Decompose  Denominator  Equivalent Fraction  Fraction  Like Denominator  Mixed Number  Number Properties  Numerator  Visual Fraction Model  Whole |
|  | 4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection*. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. | Data Set  Fraction  Line Plot |
| **Unit 17: Multiplying Fractions** (Introduction of multiplying fractions, students relate the skill of multiplying whole numbers to multiplying fractions. This is foundational to operations with rational numbers.) | **4.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. \*\*\***  **4.NF.4a Understand a fraction *a*/*b* as a multiple of 1/*b*. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4)*.**  **4.NF.4b Understand a multiple of a/b as a multiple of 1/b and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)***  **4.NF.4c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Compose  Decompose  Denominator  Equivalent Fraction  Fraction  Like Denominator  Mixed Number  Number Properties  Numerator  Visual Fraction Model  Whole |

| **TERM 4**  **UNIT OF STUDY**  (REAL-WORLD APPLICATION) **q** | **MS CCR STANDARDS q** | **STANDARDS FOR MATHEMATICAL  PRACTICE (SMPs) q** | CORE ACADEMIC **VOCABULARY TERMS q** |
| --- | --- | --- | --- |
| **Unit 18: Solving Problems with the Four Operations** (After building an understanding of addition, subtraction, multiplication, and division, students relate their computational skills to solving word problems where they apply the computation to its appropriate context. This is foundational for relating mathematics concepts to real-world context to solve problem.) | **4.OA.3 Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. | Addition  Division  Equation  Estimation  Multiplication  Remainder  Rounding  Subtraction  Unknown Quantity  Variable |
|  | 4.MD.2 Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 5** Use appropriate tools strategically. * **SMP 6** Attend to precision. | Addition  Decimal  Division  Fraction  Larger Unit  Multiplication  Smaller Unit  Subtraction  Unit |

***\*See*** [**Glossary, Table 2**](http://www.corestandards.org/Math/Content/mathematics-glossary/Table-2/)***.***

***\*\* Grade 4 expectations in this domain are limited to whole numbers less than or equal l to 1,000,000.***

***\*\*\* Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.***

***\*\*\*\* Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.***

1. *https://tntp.org/assets/documents/TNTP\_The-Opportunity-Myth\_Web.pdf* [↑](#footnote-ref-2)