****

****

SUGGESTED

**INSTRUCTIONAL**

**PLANNING GUIDE**

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

**q Mathematics**

|  |
| --- |
| **Grade 6** |

The Mississippi State Board of Education, the Mississippi Department of Education, the Mississippi School for the Arts, the Mississippi School for the Blind, the Mississippi School for the Deaf, and the Mississippi School for Mathematics and Science do not discriminate on the basis of race, sex, color, religion, national origin, age, or disability in the provision of educational programs and services or employment opportunities and benefits. The following office has been designated to handle inquiries and complaints regarding the non‑discrimination policies of the above mentioned entities: Director, Office of Human Resources, Mississippi Department of Education, 359 North West Street, P.O. Box 771, Jackson, MS  39205‑0771,  (601)359-3513.

**Mississippi Department of Education**359 North West Street

P. O. Box 771

Jackson, Mississippi 39205-0771

(601) 359-3513

[www.mdek12.org](http://www.mdek12.org)

|  |  |
| --- | --- |
| **MISSISSIPPI DEPARTMENT OF EDUCATION** | |
| **Carey M. Wright, Ed.D.**  State Superintendent of Education | |
| **Nathan Oakley, Ph.D.**  Chief Academic Officer | |
| **Wendy Clemons**  Executive Director, Office of Secondary  Education/Dropout Prevention & Professional Development | **Tenette Smith, Ed.D.**  Executive Director, Office of Elementary  Education and Reading |
| **Marla Davis, Ph.D.** State Director of Curriculum and Instruction | **Elise Brown**  Director of Online Professional Development  Mathematics Professional Development Coordinator (6-12) |
| **Tommisha Johnson** K-12 Mathematics Content Director | **Amy Pinkerton**  Mathematics Professional Development Coordinator (K-5) |

**Special Acknowledgements**

Bailey Education Group

The Kirkland Group

**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) * [Illustrative Mathematics Grade 6 Scope and Sequence](https://curriculum.illustrativemathematics.org/MS/teachers/1/index.html) * [Carnegie Learning Course 1 Pacing](https://cdn.carnegielearning.com/assets/mathiax-pdfs/C01_TIG_SS.pdf) * [enVision Math 2.0 Correlation the MS CCRS 6-8](https://assets.savvas.com/correlations/MS_2017_enV2.0_G6-8.pdf?_ga=2.102570627.329201468.1593197914-1093477658.1593035292) * [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) * [Kendall Hunt-Illustrative Mathematics Curriculum](https://im.kendallhunt.com/) | | * [Achieve the Core Coherence Map-6th Grade Math](https://achievethecore.org/coherence-map/6) * [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/) * [Teacher Desmos](https://teacher.desmos.com/) * [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/content/upload/Instructional%20Practice%20Guide_Math_K-8.pdf) * [Mississippi Exemplar Units and Lesson Plans-Grade 6 Math](https://www.mdek12.org/sites/default/files/documents/OAE/OEER/Exemplar%20Units/math/6th-Grade-Exemplar-FINAL_20181126.pdf) * [Mississippi CCRS Exemplar Lesson Plans](https://mdek12.org/ESE/math/lesson-plans) * [LearnZillion 6th Grade Course Resources](https://learnzillion.com/wikis/235592-learnzillion-illustrative-mathematics-grade-6-course/) * [LearnZillion Instructional Videos](https://learnzillion.com/wikis/99913-math-instructional-videos/) * [Open-up Resources Mathematics- Family Support Center-Grade 6](https://access.openupresources.org/curricula/our6-8math-v1/6/families/index.html) * [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) * [Desmos Four-Function Calculator](https://www.desmos.com/fourfunction) * [Inside Mathematics Performance Tasks 2-HS](https://www.insidemathematics.org/performance-assessment-tasks) * [Illustrative Mathematics Grade 6 Tasks](http://tasks.illustrativemathematics.org/content-standards/6) * [MARS Mathematics Assessment Project (6-HS)](https://www.map.mathshell.org/index.php) * [Goalbook Pathways Grade 6](https://goalbookapp.com/pathways/?ref=topic" \l "!/browse-topics/math/6) * [Khan Academy 6 Math](https://www.khanacademy.org/math/cc-sixth-grade-math) * [Open-up Resources Mathematics-Student Resources-Grade 6](https://access.openupresources.org/curricula/our6-8math-v1/6/students/index.html) | * [MDE Professional Development Resources](https://www.mdek12.org/OPD/home) * [SchoolKit and IM Video Lessons-Grade 6](http://schoolkitgroup.com/video-grade-6/) * [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: Whole Number and Decimal Operations**  (In this unit students learn to fluently add, subtract, multiply and divide multi-digit numbers and decimals. Learning to fluently compute multi-digit numbers prepares students to be able to complete everyday tasks such as balancing a checking account or completing a monthly budget. It also lays the foundation for more advanced mathematical calculations to come later.) | 6.NS.2 Fluently divide multi-digit numbers using the standard algorithm. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Algorithm  Divide  Dividend  Division  Divisor  Multi-digit number  Partial Quotient-Quotient  Remainder  Standard Algorithm |
|  | | 6.NS.3 Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. | * **SMP 2** Reason abstractly and quantitatively. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Decimal  Decimal Point  Place Value |
| **Unit 2: Whole Number and Decimal Operations with Statistical Data**  (Students expand their knowledge of operations with whole numbers and decimals by using these skills to compute statistical data. Learning to calculate Statistical Data prepares students for conducting research, collecting, and organizing qualitative and/or quantitative data.) | | 6.SP.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. *For example, "How old am I?" is not a statistical question, but "How old are the students in my school?" is a statistical question because one anticipates variability in students' ages*. | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 6** Attend to Precision | Categorical Data  Data  Numerical Data  Qualitative  Quantitative  Statistical Question  Statistics |
|  | | 6.SP.2 Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. | * **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. | Center  Data Set  Distribution  Spread |
|  | | 6.SP.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. | * **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. | Mean  Median  Measure of Center  Measure of Variation  Mode  Range |
|  | | 6.SP.4 Display numerical data in plots on a number line, including dot plots, histograms, and box plots. | * **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. | Box-and-Whisker Plot Box Plot  Dot Plot  Frequency Table  Histogram  Interquartile Range  Outlier  Quartile  Skewed  Symmetrical |
|  | | 6.SP.5 Summarize numerical data sets in relation to their context, such as by:  6.SP.5a Reporting the number of observations.  6.SP.5b Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.  6.SP.5c Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.  6.SP.5d Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered. | * **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. | Deviation  Mean Absolute Deviation |

| **TERM 2**  **UNIT OF STUDY**  (REAL-WORLD APPLICATION) **q** | **MS CCR STANDARDS q** | **STANDARDS FOR MATHEMATICAL  PRACTICE (SMPs) q** | CORE ACADEMIC **VOCABULARY TERMS q** |
| --- | --- | --- | --- |
| **Unit 3: Fractions, Rates, and Ratios** (Understanding the operations of fractions, prepares students for working with rational numbers which is a major component of middle school math. Expanding this knowledge to ratios and rates provides students with an avenue for understanding comparisons such as pounds per dollar or miles per hour, as well as, stats such as 1 out of every 3 students receive free lunch, or 38% of the class failed the test.) | **6.NS.1 Interpret and compute quotients of fractions and solve word problems involving division of fractions by fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc). How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?*** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Multiplicative Inverse  Reciprocal  Visual Fraction Model |
|  | **6.RP.1 Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. *For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 6** Attend to Precision. | Ratio  Part-to-Part  Part-to-Whole |
|  | **6.RP.2 Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ 0 and use rate language in the context of a ratio relationship. *For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger." \**** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 6** Attend to Precision. | Equivalent Ratios  Rate  Unit Rate |
|  | **6.RP.3 Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.**  **6.RP.3a Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.**  **6.RP.3b Solve unit rate problems including those involving unit pricing and constant speed. *For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?***  **6.RP.3c Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.**  **6.RP.3d Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.** | * **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 7** Look for and make use of structure. | Percent |
| **Unit 4: Integers and the Number Line**  (Students are introduced to the concept of positive and negative amounts and operations involving addition and subtraction. The students explore these concepts using the number line diagram and other visual models. The purpose of learning this information is in real-world context such as, but not limited to, temperature, sea-level, balancing bank accounts, and even Chemistry.) | **6.NS.5 Understand that positive and negative numbers are used together to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge); use positive and negative numbers to represent quantities in real-world contexts, explaining the meaning of 0 in each situation.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. | Credit  Debit  Integer  Negative  Positive  Zero |
|  | **6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.**  **6.NS.6a Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself, e.g., -(-3) = 3, and that 0 is its own opposite.**  **6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. | Graph  Horizontal Line Diagram  Number Line Diagram  Opposite  Point  Rational Number  Vertical Line Diagram |
|  | **6.NS.7 Understand ordering and absolute value of rational numbers.**  **6.NS.7a Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. *For example, interpret -3 > -7 as a statement that -3 is located to the right of -7 on a number line oriented from left to right*.**  **6.NS.7b Write, interpret, and explain statements of order for rational numbers in real-world contexts. *For example, write -3 oC > -7 oC to express the fact that -3 oC is warmer than -7 oC*.**  **6.NS.7c Understand the absolute value of a rational number as its distance from 0 on the number line; interpret absolute value as magnitude for a positive or negative quantity in a real-world situation. *For example, for an account balance of -30 dollars, write |-30| = 30 to describe the size of the debt in dollars*.**  **6.NS.7d Distinguish comparisons of absolute value from statements about order. *For example, recognize that an account balance less than -30 dollars represents a debt greater than 30 dollars*.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. | Absolute Value  Equal To (=)  Greater Than (>)  Greater Than or Equal To (>)  Less Than (<)  Less Than or Equal to Inequality (<) |
|  | 6.NS.9 Apply and extend previous understandings of addition and subtraction to add and subtract integers; represent addition and subtraction on a horizontal or vertical number line diagram.  6.NS.9a Describe situations in which opposite quantities combine to make 0. For example, a hydrogen atom has 0 charge because its two constituents are oppositely charged.  6.NS.9b Understand p + q as the number located a distance |q| from p, in the positive or negative direction depending on whether q is positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of integers by describing real-world contexts.  6.NS.9c Understand subtraction of integers as adding the additive inverse, p – q = p + (–q). Show that the distance between two integers on the number line is the absolute value of their difference and apply this principle in real-world contexts.  6.NS.9d Apply properties of operations as strategies to add and subtract integers.  *For additional resources reference 7.NS.1* | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. | Additive Inverse |

| **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 5: Integers and the Coordinate Plane/Grid**  (Students learn to graph points on a coordinate grid by locating integer values on the horizontal number line (x-axis) and the vertical number line (y-axis). They then expand knowledge of adding and subtracting integers by determining the distance between two coordinate pairs.) | **6.NS.6 Understand a rational number as a point on the number line. Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates.**  **6.NS.6b Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes.**  **6.NS.6c Find and position integers and other rational numbers on a horizontal or vertical number line diagram; find and position pairs of integers and other rational numbers on a coordinate plane.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. | Coordinate  Coordinate Axis  Coordinate Pair  Coordinate Plane  Number Line Diagram Opposite  Ordered Pair  Quadrant  Rational Number  Reflection  X-Axis  Y-Axis |
|  | **6.NS.8 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.** | * **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 7** Look for and make use of structure. | Absolute Value  Coordinate Pair  Coordinate Plane  Graph  Ordered Pair  Origin  Quadrant  X-Axis  Y-Axis |
| **Unit 6: Integers, Geometric Figures, and the Coordinate Grid**  (Students learn to use their knowledge of adding and subtracting integers along with those of plotting points on a coordinate plane to draw geometrical figures and determine side length. This prepares students for more elaborate use of the coordinate grid in Geometry or professional fields such as robotics, carpentry, or architecture.) | 6.G.3 Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. | * **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 7** Look for and make use of structure. | Base  Edge  Length  Polygon  Side  Vertex (Vertices) |
| **Unit 7: Whole Number Exponents and Geometric Formulas** (Students learn the foundation of writing terms in exponential form to standard form and vice versa. Students expand this knowledge by learning the use of exponents as they relate to solving geometric formulas. This provides students with an understanding of exponent rules and why area measures are in squared units, and volume measures are in cubed units) | **6.EE.1 Write and evaluate numerical expressions involving whole-number exponents.** | * **SMP 2** Reason abstractly and quantitatively. | Base  Exponent  Exponential Form  Numerical Expression  Standard Form |
|  | 6.G.1 Find the area of right triangles, other triangles, special quadrilaterals, and polygons by composing into rectangles or decomposing into triangles and other shapes; apply these techniques in the context of solving real-world and mathematical problems. | * **SMP 1** Make sense of problems and persevere in solving them. * **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 6** Attend to Precision. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Area  Composite Figure  Equilateral Triangle  Formula  Isosceles Triangle  Parallelograms  Quadrilateral  Rhombus  Right Triangle  Trapezoid |
|  | 6.G.2 Find the volume of a right rectangular prism with fractional edge lengths by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas *V = l w h* and *V = b h* to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems. | * **SMP 1** Make sense of problems and persevere in solving them. * **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 6** Attend to Precision. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Base  Height  Length  Right Rectangular Prism  Unit Cube  Volume  Width |
|  | **6.EE.2c Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations). *For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2*.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 6** Attend to Precision. * **SMP 7** Look for and make use of structure. | Algebraic Expression  Evaluate  Expression  Formula  Numerical Expression  Substitution  Variable |
|  | 6.G.4 Represent three-dimensional figures using nets made up of rectangles and triangles and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems. | * **SMP 1** Make sense of problems and persevere in solving them. * **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 6** Attend to Precision. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Net  Surface Area  Three-Dimensional Figure |

| **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 8: Number Properties and Factoring**  (This unit is an extension of the distributive property used with numerical expressions to that of algebraic expressions. It strengthens students’ ability to work with expressions and prepares students for complex math skills such as factoring polynomials.) | 6.NS.4 Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1-100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).* | * **SMP 7** Look for and make use of structure. | Distributive Property  Equivalent Expression  Greatest Common Factor (GCF)  Least Common Multiple (LCM) |
|  | **6.EE.2 Write, read, and evaluate expressions in which letters stand for numbers.**  **6.EE.2a Write expressions that record operations with numbers and with letters standing for numbers. *For example, express the calculation "Subtract y from 5" as 5 - y*.**  **6.EE.2b Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity. *For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms*.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 6** Attend to Precision. * **SMP 7** Look for and make use of structure. | Coefficient  Constant  Difference  Expression  Factor  Product  Quotient  Substitute  Sum  Term  Variable |
|  | **6.EE.3 Apply the properties of operations to generate equivalent expressions. *For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y*.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 6** Attend to Precision. * **SMP 7** Look for and make use of structure. | Associative Property  Commutative Property  Distributive Property  Equivalent Expression  Factor  Identity Property  Like Terms  Number Property  Zero Property |
|  | **6.EE.4 Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.*** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 6** Attend to Precision. * **SMP 7** Look for and make use of structure. | Associative Property  Commutative Property  Distributive Property  Equivalent Expression  Factor  Identity Property  Like Terms  Number Property  Substitute  Zero Property |
| **Unit 9: Equations and Inequalities** (This unit builds students’ understanding of writing an expression to represent a real-world situation to writing an equation or inequality based on the constraints of the situation. Once a true sentence has been developed, students learn to solve these simple mathematical sentences through substitution. This allows the students to translate real-world events into mathematical language and solve.) | **6.EE.5 Understand solving an equation or inequality as a process of answering a question: which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. | Equation  Evaluate  Inequality  Substitution  True Equation  True Inequality |
|  | **6.EE.6 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set.** | * **SMP 2** Reason abstractly and quantitatively. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. | Algebraic Expression  Expression  Variable |
|  | **6.EE.7 Solve real-world and mathematical problems by writing and solving equations of the form *x* + *p* = *q* and *px* = *q* for cases in which *p*, *q* and *x* are all nonnegative rational numbers.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. | Equation  Evaluate  Inequality  Substitution  Variable |
|  | **6.EE.8 Write an inequality of the form *x* > *c* or *x* < *c* to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form *x* > *c* or *x* < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams.** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. | Condition  Constraint  Equation  Evaluate  Graph  Inequality  Infinite  Infinitely Many Solutions  Number Line Diagram  Solution  Substitution  Variable |
|  | **6.EE.9 Use variables to represent two quantities in a real-world problem that change in relationship to one another.**   * **Write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable.** * **Analyze the relationship between the dependent and independent variables using graphs and tables and relate these to the equation.**   ***For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*** | * **SMP 1** Make sense of problems and persevere in solving them. * **SMP 2** Reason abstractly and quantitatively. * **SMP 3** Construct viable arguments and critique the reasoning of others. * **SMP 4** Model with Mathematics. * **SMP 7** Look for and make use of structure. * **SMP 8** Look for and express regularity in repeated reasoning. | Dependent Variable  Independent Variable |

\* ***Expectations for unit rates in this grade are limited to non-complex fractions.***

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