5th Grade Math

Pacing Guide First Semester

1st Quarter

Unit Title: Fluency with Whole Numbers and Decimals

Essential Questions:

- How can you use place value and strategies to solve whole number and decimal number operations?
- How can you describe the relationship between two place-value positions?
- How do you read, write, and represent whole numbers through hundred millions?
- How can you use base-ten blocks to model decimal addition/subtraction?
- How can you estimate decimal sums and differences?
- How can place value help you add/subtract decimals?
- How do you multiply by 1-digit and 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 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?

Grade Readiness

Readiness skills (behaviors): Students can:

- represent powers of 10 using whole number exponents (103 = 10x10x10 = 1000).
- explain patterns when multiplying a number by powers of 10.
- explain the movement of the decimal point when multiplying or dividing by powers of 10.
- read and write decimals to thousandths in standard form, word form, and expanded form.
- compare decimals to the thousandths using >, =, <.
- recognize the 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.
- round decimals.
- fluently add and subtract within 1,000,000 using appropriate strategies and the algorithms.
- 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.
- 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 multiplication and division calculation by using equations, rectangular arrays, and/or area models.
- interpret a multiplication equation as a comparison (e.g., interpret 35 = 5 x 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.

- multiply or divide to solve contextual problems involving multiplicative comparison and distinguish multiplicative comparison from additive comparison.
- solve multi-step contextual 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.
- 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.

Knowledge (Standards): Students who demonstrate understanding can:

- fluently multiply multi-digit whole numbers.
- divide 4-digit dividends by 2-digit divisors using multiple strategies to find a quotient with no remainder.
- recognize the digits 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.
- add and subtract decimals to hundredths.
- multiply and divide decimals to hundredths.
- represent powers of 10 using whole number exponents.
- explain patterns when multiplying a number by powers of 10.
- explain the movement of the decimal point when multiplying or dividing by powers of 10.

Pacing	Instruct. Days	TN Standards	Differentiation (ELL, SPED, Intervention, Enrichment)	Mathematical Processes	Resources	Assessments/ District Benchmarks/ State Exams
Quarter 1 Weeks 1-3	15	5.NBT.A.1 5.NBT.A.2	**Struggling:** Squares and cubes of numbers can be modeled by sketching squares and arranging cubes. Multiply whole numbers by 10, 100, 1000, etc. **Enrichment:** Students create a game using numbers such as 50,000; 300,000; 12,000; 600; 800,000. Determine what factor should be written on a blank card and how many "× 10" cards are needed to have a product that is one of the numbers to match with the whole number.	MP1, MP2, MP3, MP4, MP7, MP8 Literacy Skills 1, 2, 3, 4	Go Math textbook 1.1-1.5 and Grab & Go Kit trade books District-approved websites Mastery Connect Hundreds Charts Base 10 blocks graph paper number lines Place value charts	Teacher Observation Formative Assessment Exit Tickets Student Product
Quarter 1 Weeks 4-5	9	5.NBT.A.3 5.NBT.A.1	**Struggling:** Use of Khan Academy and Go Math Videos to reinforce standards.	MP2, MP7, MP8 Literacy Skills	Go Math textbook 3.1-3.6, 3.8-3.9, 3.11-3.12 and Grab & Go Kit	Teacher Observation Formative Assessment

		5.NBT.A.4 5.NBT.B.7	Have students round whole numbers, round to ones and tenths only. **Enrichment:** Conduct an error analysis of an exponent being used incorrectly and explain the error.	1, 2, 3	trade books District-approved websites Mastery Connect Hundreds Charts Base 10 blocks graph paper number lines Place value charts	Exit Tickets Student Product Assessment over 5.NBT.A.2
Quarter 1 Weeks 6-7	10	5.NBT.B.5 5.NBT.B.7	**Struggling:** Use of multiplication chart; multiply only up to two-digit by two-digit Continued review of multiplication facts Accurately multiply whole numbers (up to two-digit by four-digit factors) using at least one appropriate strategy or algorithm **Enrichment:** Produce a PowerPoint or video showing the steps of multi-digit multiplying using different strategies Analyze sample work and justify why an algorithm or strategy is correct or incorrect.	MP1, MP2, MP3 Literacy Skills 1, 2, 3, 4	Go Math textbook 1.6-1.7, 4.1-4.8 and Grab & Go Kit trade books District-approved websites Mastery Connect Hundreds Charts Base 10 blocks graph paper multiplication charts	Teacher Observation Formative Assessment Exit Tickets Student Product Assessment over 5.NBT.B.5 AIMSWeb screener for students new to district
Quarter 1 Weeks 8-9	10	5.NBT.B.6 5.NBT.B.7	**Struggling:** Use of multiplication chart, base 10 blocks, and anchor charts Math Talk to guide students through process Use a graphic to guide students on where to begin dividing Find whole-number quotients and remainders with up to four- digit dividends and two-digit divisors when the divisor is a multiple of 10. **Enrichment:** Choose a problem that you solved in the lesson and solve the same problem using the partial quotients method. Compare methods.	MP1, MP2 MP3, MP4, MP6, MP8 Literacy Skills 1, 2, 3, 4	Go Math textbook 1.8, 2.2-2.9, 5.1-5.7 and Grab & Go Kit trade books District-approved websites Mastery Connect Base 10 blocks graph paper number lines fraction tiles	Teacher Observation Formative Assessment Exit Tickets Student Product

5th Grade Math

Pacing Guide First Semester

2nd Quarter

Unit Title: Operations with Fractions

Essential Questions:

- How can you find a fractional part of a group?
- How can you add and subtract fractions with unlike denominators?
- How do you multiply fractions?
- How does a fraction represent division?
- How can you divide fractions by solving a related multiplication sentence?
- 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 add and subtract mixed numbers with unlike denominators?
- 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 properties help you add fractions with unlike denominators?
- 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 do you divide a whole number by a fraction and divide a fraction by a whole number?
- How does a fraction represent division?
- How can you divide fractions by solving a related multiplication sentence?

Grade Readiness

Readiness skills (behaviors): Students can:

- explain why a fraction a/b is equivalent to a fraction a x n $/b$ x n or $a \div n$ $/b \div n$ 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.
- compare two fractions with different numerators and different denominators by creating common denominators or common numerators or by comparing to a benchmark fraction such as 1 /2.
- understand a fraction a $/b$ with a > 1 as a sum of fractions 1/ b.
- apply and extend previous understandings of multiplication as repeated addition to multiply a whole number by a fraction.
- solve one- or two-step real-world problems involving whole number measurements with all four operations within a single system of measurement including problems involving simple fractions.
- use the four operations with whole numbers to solve problems.
- apply and extend previous understandings of multiplication as repeated addition to multiply a whole number by a fraction.

- understand properties of multiplication and the relationship between multiplication and division.
- have an understanding of fractions as numbers

Knowledge (Standards): Students who demonstrate understanding can:

- find equivalent fractions and add and subtract fractions with unlike denominators using equivalent fractions.
- add and subtract mixed numbers with unlike denominators using equivalent fractions.
- multiply fractions and determine the sequence of operations when multiplying a fraction to a whole number and two fractions.
- multiply fractional side lengths to find the area of a rectangle and prove multiplying fractional side lengths to find the area is the same as tiling a rectangle with unit squares.
- model the area of rectangles with fractional side lengths with unit squares.
- explain the relationship between two multiplication problems that share a common factor (1/4 x 8 and ¼ x 16).
- compare the product of two factors without multiplying.
- explain why multiplying a number by a fraction greater than one will result in a product greater than the given number.
- explain why multiplying a fraction by one (which can be written as various fractions, ex. 2/2, 3/3 , etc.) results in an equivalent fraction.
- explain why multiplying a fraction by a fraction will result in a product smaller than the given number.
- solve real world problems involving multiplication of fractions and mixed numbers using models or equations.
- represent division of a unit fraction by a non-zero whole number in a variety of ways, of a whole number by a unit fraction in a variety of ways and of a unit fraction by a non-zero whole number and a whole number by a unit fraction in a variety of ways to solve real world problems.

Pacing	Instruct. Days	TN Standards	Differentiation (ELL, SPED, Intervention, Enrichment)	Mathematical Processes	Resources	Assessments/ District Benchmarks/ State Exams
Quarter 2 Week 1-2	10	5.NF.A.1 5.NF.A.2	**Struggling:** Use of multiplication tables to assist with finding equivalent fractions Continued use of fraction tiles and number lines as needed Add and subtract fractions (including mixed numbers) with unlike denominators where the denominators are 6 or less and one is not a factor of the other and a visual fraction model is provided. **Enrichment:** When provided a visual fraction model, generate the addition or subtraction equation it represents, and explain why.	MP1, MP2, MP4, MP5, MP6 Literacy Skills 2, 3	Go Math textbook 6.1-6.7, 6.9-6.10 and Grab & Go Kit trade books District-approved websites Mastery Connect Base 10 blocks graph paper number lines fraction tiles	Teacher Observation Formative Assessment Exit Tickets Student Product Mid-point assessment over graphing ordered pairs (5.G.A.1 and 5.G.A.2)
Quarter 2 Week 3-4	9	5.NF.B.4 5.NF.B.5 5.NF.B.6	**Struggling:** Find the area of a rectangle with fractional lengths by tiling when a visual representation is provided.	MP1, MP2, MP4, MP5, MP6 Literacy Skills	Replace Go Math chapters 7-8 with EngageNY Module 4 Lessons 2-33	Teacher Observation Formative Assessment Exit Tickets

			Solve real-world word problems involving multiplication of a fraction by a whole number when a visual fraction model is provided. **Enrichment:** Find the area of rectilinear shapes with fractional side lengths. Justify solutions to real-world problems involving multiplication of fractions and mixed numbers by providing visual fraction models or equations. Create a story context for multiplication of fractions and mixed numbers.	2, 3	District-approved websites Mastery Connect Base 10 blocks Color tiles fraction tiles	Student Product Assessment over 5.NF.B.4
Quarter 2 Week 5-7	15	5.NF.B.3 5.NF.B.7	**Struggling:** Use of math videos to reteach Use of fraction tiles and pictorial representations **Enrichment:** Engage in conversations in which they defend their solutions using mathematical, sound reasoning	MP1, MP3, MP4, MP5 Literacy Skills 2, 3, 4	Replace Go Math chapters 7-8 with EngageNY Module 4 Lessons 2-33 District-approved websites Mastery Connect Base 10 blocks Color tiles fraction tiles	Teacher Observation Formative Assessment Exit Tickets Student Product Assessment On fraction division (5.NF.B.3 and 5.NF.B.7)
Quarter 2 Week 8	5	5.MD.C.3 5.MD.C.4 5.MD.C.5	**Struggling:** Use of unit cubes to measure volume Measure volumes by counting unit cubes of a figure that is n units long, 1 unit wide and tall Measure volumes by counting unit cubes when a pictorial representation showing all cubes is provided Choose V = l x w x h as the for finding volume of a rectangular prism. **Enrichment:** Explain the relationship that exist between working with liquid and solid volume Find volumes of solid figures composed of two non-overlapping right rectangular prisms when a pictorial representation without all dimensions labeled is provided	MP1, MP4, MP5, MP6 Literacy Skills 2, 3	Go Math textbook 11.5-11.6, 11.8-11.11 and Grab & Go Kit trade books District-approved websites Mastery Connect Measurement tools (rulers, beakers, etc.) Unit cubes	Teacher Observation Formative Assessment Exit Tickets Student Product

5th Grade Math

Pacing Guide Second Semester

3rd Quarter

Unit Title: Geometry and Measurement

Essential Questions:

- How do unit cubes help you build solid figures and understand the volume of a rectangular prism?
- What strategies can you use to compare and convert measurements?
- How can you use line plots to help you graph and interpret data?
- 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 and how can you use a formula to find the volume of a rectangular prism?
- How can you find the volume of rectangular prisms that are combined?
- How can you identify and classify polygons?
- How can you classify and compare quadrilaterals?
- How can you compare and convert customary units of length, capacity, and weight?
- How can you compare and convert metric units?
- How can you solve elapsed time problems by converting units of time?
- How can a line plot help you find an average with data given in fractions?

Grade Readiness

Readiness skills (behaviors): Students can:

- apply and extend previous understandings to make a line plot to display a set of measurements in fractions of a unit (1/2, 1/4, 1/8).
- measure and estimate to determine relative sizes of measurement units within a single system of measurement involving length, liquid volume, and mass/weight of objects using customary and metric units.
- know and apply the area and perimeter formulas for rectangles in real world and mathematical problems.
- tell and write time to the nearest minute and measure time intervals in minutes.
- recognize that plane figures have an area and understand concepts of area measurement.

Knowledge (Standards): Students who demonstrate understanding can:

- recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- understand that 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.
- understand that 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.
- measure volume by counting unit cubes, using cubic centimeters, cubic inches, cubic feet, and improvised units.
- relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume of right rectangular prisms.
- 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 whole-number products of three factors as volumes (e.g., to represent the associative property of multiplication).
- know and apply the formulas V = l x w x h and V = B x h (where B represents the area of the base) 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.

- 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.
- classify two-dimensional figures in a hierarchy based on properties.
- understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category.
- use parentheses and/or brackets in numerical expressions and evaluate expressions having these symbols using the conventional order.
- write simple expressions that record calculations with numbers and interpret numerical expressions without evaluating them.
- recognize that 3 x (18,932 + 921) is three times as large as 18,932 + 921, without having to calculate the indicated sum or product.
- generate two numerical patterns using two given rules.
- identify relationships between corresponding terms in two numerical patterns.
- form ordered pairs consisting of corresponding terms from two numerical patterns and graph the ordered pairs on a coordinate plane.
- graph ordered pairs and label points using the first quadrant of the coordinate plane.
- understand in the ordered pair that the first number indicates the horizontal distance traveled along the x-axis from the origin and the second number indicates the vertical distance traveled along the y-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).
- 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.
- convert customary and metric measurement units within a single system by expressing measurements of a larger unit in terms of a smaller unit and use these conversions to solve multi-step real-world problems involving distances, intervals of time, liquid volumes, masses of objects, and money.
- 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.

Pacing	Instruct. Days	TN Standards	Differentiation (ELL, SPED, Intervention, Enrichment)	Mathematical Processes	Resources	Assessments/ District Benchmarks/ State Exams
Quarter 3 Week 1-2	9	5.MD.C.3 5.MD.C.4 5.MD.C.5	**Struggling:** Use of unit cubes to measure volume Measure volumes by counting unit cubes of a figure that is n units long, 1 unit in width, and 1 unit in height Measure volumes by counting unit cubes when a pictorial representation showing all cubes is provided Choose V = l x w x h as the formula that represents finding volume of a rectangular prism. **Enrichment:**	MP1, MP4, MP5, MP6 Literacy Skills 2, 3	Go Math textbook 11.5-11.6, 11.8-11.11 and Grab & Go Kit trade books District-approved websites Mastery Connect Measurement tools (rulers, beakers, etc.) Unit cubes	Teacher Observation Formative Assessment Exit Tickets Student Product

			Explain the relationship that exists between working with liquid and solid volume. Find volumes of solid figures composed of two non-overlapping right rectangular prisms when a pictorial representation without all dimensions labeled is provided			
Quarter 3 Week 3	4	5.G.B.3	**Struggling:** Identify parallel and perpendicular lines in a two-dimensional figure. Identify right, acute, and obtuse angles in a two-dimensional figure. Focus on vocabulary with pictorial representations **Enrichment:** Provide non-examples for given categories of two-dimensional figures.		Go Math textbook 11.1-11.3 and Grab & Go Kit trade books District-approved websites Mastery Connect Two-dimensional quadrilateral pattern blocks	Teacher Observation Formative Assessment Exit Tickets Student Product
Quarter 3 Week 4-5	10	5.OA.A.1 5.OA.A.2	**Struggling:** Use of multiplication chart Continued review of multiplication facts Accurately multiply whole numbers (up to one-digit by four-digit factors) using a model and an equation. **Enrichment:** Journal Writing: Write a problem multiplying a 3-digit number by a 2-digit number. Show all the steps to solve it by using place value and regrouping and by using partial products.	MP1, MP2, MP3 Literacy Skills 1, 2, 3, 4	Go Math textbook 11.10-11.11 and Grab & Go Kit EngageNY Module 4 Topic H trade books District-approved websites Mastery Connect Multiplication charts Hundreds charts Base 10 blocks	Teacher Observation Formative Assessment Exit Tickets Student Product
Quarter 3 Week 6-7	10	5.OA.B.3 5.G.A.1 5.G.A.2	**Struggling:** Use Khan Academy and Go Math videos **Enrichment:** Increase the difficulty and DOK of the numerical patterns	MP1, MP2, MP6, MP8 Literacy Skills 2, 3, 4	Go Math textbook 9.5-9.7, 9.2 and Grab & Go Kit EngageNY Module 6 Lesson 3 trade books	Teacher Observation Formative Assessment Exit Tickets Student Product

					District-approved websites Mastery Connect Grid paper	Assessment on OA standards
Quarter 3 Week 8-9	9	5.MD.A.1	**Struggling:** Complete a conversion table or chart to show equivalent measurements and solve simple problems involving conversions from larger units to smaller units **Enrichment:** Convert multiple solutions in order to find the end solution	MP1, MP4, MP5, MP6 Literacy Skills 1, 2, 3	Go Math textbook 10.1-10.7 and Grab & Go Kit trade books District-approved websites Mastery Connect Place value chart Number lines Fraction tiles Measurement tools (rulers, beakers, scales, gram weights, clocks)	Teacher Observation Formative Assessment Exit Tickets Student Product
Quarter 3 Week 10	5	5.MD.B.2	**Struggling:** Complete a conversion table or chart to show equivalent measurements and solve simple problems involving conversions from larger units to smaller units **Enrichment:** Convert multiple solutions in order to find the end solution	MP1, MP4, MP5, MP6 Literacy Skills 2, 3	Go Math textbook 9.1 and Grab & Go Kit EngageNY Module 4 Lesson 1 District-approved websites Mastery Connect Place value chart Number lines Fraction tiles Measurement tools	Teacher Observation Formative Assessment Exit Tickets Student Product

5th Grade Math

Pacing Guide Second Semester

4th Quarter

Title: Measurement and Data

Essential Questions:

- How can a line plot help you find an average with data given in fractions?
- How can you create and use a line plot with a given set of unit fraction measurements?
- How can you solve problems using data on a line plot?
- How can you organize data to determine answers?

Grade Readiness

Readiness skills (behaviors): Students can:

- apply and extend previous understandings to make a line plot to display a set of measurements in fractions of a unit (1/2, 1/4, 1/8)
- know and apply the area and perimeter formulas for rectangles in real-world and mathematical problems

Knowledge (Standards): Students who demonstrate understanding can:

- 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.
- fluently divide multi-digit numbers using a standard algorithm.
- fluently add, subtract, multiply, and divide multi-digit decimals using a standard algorithm for each operation.

Pacing	Instruct. Days	TN Standards	Differentiation (ELL, SPED, Intervention, Enrichment)	Mathematical Processes	Resources	Assessments/ District Benchmarks/ State Exams
Quarter 4 Week 1	5	5.MD.B.2	**Struggling:** Complete a conversion table or chart to show equivalent measurements and solve simple problems involving conversions from larger units to smaller units **Enrichment:** Convert multiple solutions in order to find the end solution	MP1, MP4, MP5, MP6 Literacy Skills 2, 3	Go Math textbook 9.1 and Grab & Go Kit EngageNY Module 4 Lesson 1 Trade books District-approved websites Mastery Connect Place value chart Number lines Fraction tiles Measurement tools	Teacher Observation Formative Assessment Exit Tickets Student Product
Quarter 4 Week 2-3	9	TNReady Review and Practice of	Review	Review	District-approved websites	Teacher Observation Formative Assessment

		Fifth Grade Math Standards Review Learning Targets for TN Standards			Mastery Connect Grid paper	Exit Tickets Student Product
Quarter 4 Week 4-5	10	**TNReady Assessment**	Review	Review	District-approved websites Mastery Connect manipulatives	Teacher Observation Formative Assessment Exit Tickets Student Product
Quarter 4 Week 6-9	15	Prepare for 6th Grade Review and extend 5th grade skills. 6.NS.B.2 6.NS.B.3	**Struggling:** Continue use of manipulatives, peer mentoring, and teacher prompting as needed. **Enrichment:** Continue to challenge students with higher level contextual problems.	MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8	Go Math review projects End-of-year resources EngageNY lessons	Teacher Observation Formative Assessment Exit Tickets Student Product

MATHEMATICAL PRACTICES

MP1 Make sense of problems and persevere in solving them.
MP2 Reason abstractly and quantitatively.
MP3 Construct viable arguments and critique the reasoning of others.
MP4 Model with Mathematics.
MP5 Use appropriate tools strategically.
MP6 Attend to precision.
MP7 Look for and make use of structure.
MP8 Look for and express regularity in repeated reasoning.