

5th Grade Mathematics

Curriculum/Content Area: Mathematics	Course Length: School Year
Course Title: 5th Grade Mathematics	Date last reviewed: February 2nd, 2016 Previous 5th Grade UBD
Prerequisites: NA	Board approval date: TBD
Primary Resource: Bridges in Mathematics	

Desired Results

Course description and purpose: This framework for improving student learning focuses on high-quality math standards. It provides teachers with a clear set of math concepts and skills for students to understand and be able to do by the end of the school year.

Mathematical Practice Standards	
<p>The Standards for Mathematical Practice are central to the teaching and learning of mathematics. These practices describe the behaviors and habits of mind that are exhibited by students who are mathematically proficient. Mathematical understanding is the intersection of these practices and mathematics content. It is critical that the Standards for Mathematical Practice are embedded in daily mathematics instruction.</p>	
Mathematical Practice Standards	Grade Level/Course Explanation
Habits of Mind	Mathematically proficient students in grade 5 should solve problems by applying their understanding of operations with whole numbers, decimals, and fractions including mixed numbers. They solve problems related to volume and measurement conversions. Students seek the meaning of a problem and look for efficient ways to represent and solve it. They may check their thinking by asking themselves such questions as: "What is the most efficient way to solve the problem?" "Does this answer make sense?" "Can I solve this problem in a different way?"
	Mathematically proficient students in grade 5 continue to refine their mathematical communication skills by using clear and precise language in their discussions with others and in their own reasoning.

		Students use appropriate terminology when referring to expressions, fractions, geometric figures, and coordinate grids. They are careful about specifying units of measure and state the meaning of the symbols they choose. For instance, when figuring out the volume of a rectangular prism they record their answers in cubic units.
Reasoning & Explaining	MP.2 Reason abstractly and quantitatively.	Mathematically proficient 5th graders should recognize that a number represents a specific quantity. They connect quantities to written symbols and create a logical representation of the problem at hand, considering both the appropriate units involved and the meaning of quantities. They extend this understanding from whole numbers to their work with fractions and decimals. Students write simple expressions that record calculations with numbers and represent or round numbers using place value concepts.
	MP.3 Construct viable arguments and critique the reasoning of others.	In 5th grade, mathematically proficient students explain their thinking to others and respond to others' thinking. They may construct arguments using concrete referents, such as objects, pictures, and drawings. They explain calculations based on models and properties of operations and rules that generate patterns. They demonstrate and explain the relationship between volume and multiplication. They refine their mathematical communication skills as they participate in mathematical discussions posing such questions as: "How did you get your answer?" "Why is that true?" "Why does it work that way?" "Do you think it will always work, or can we come up with an example that doesn't?"
Modeling & Using Tools	MP.4 Model with mathematics.	Mathematically proficient students in grade 5 experiment with representing problem situations in multiple ways including numbers, words (mathematical language), making labeled sketches, using objects, making a chart, list, or graph, creating equations, and so on. Students need opportunities to connect the different representations and explain the connections. They should be able to use all of these representations as needed. Fifth graders should evaluate their results in the context of the situation and whether the results make sense. They also

		evaluate the utility of models to determine which models are most useful and efficient to solve problems.
	MP.5 Use appropriate tools strategically.	Mathematically proficient fifth graders consider the available tools (including estimation) when solving a mathematical problem and decide when certain tools might be helpful. For instance, they may use unit cubes to fill a rectangular prism and then use a ruler to measure the dimensions. They use graph paper to accurately create graphs and solve problems or make predictions from real world data, or might elect to use spreadsheet software instead.
Seeing Structure & Generalizing	MP.7 Look for and make use of structure.	In 5th grade, mathematically proficient students look closely to discover a pattern or structure. For instance, students use properties of operations as strategies to add, subtract, multiply, and divide with whole numbers, fractions, and decimals. They examine numerical patterns and relate them to a rule or graphical representation.
	MP.8 Look for and express regularity in repeated reasoning.	Mathematically proficient 5th graders use repeated reasoning to understand algorithms and make generalizations about patterns. Students connect place value and their prior work with operations to understand algorithms to fluently multiply multi-digit numbers and perform all operations with decimals to hundredths. Students explore operations with fractions with visual models and begin to formulate generalizations.

Priority Standard Clusters

5.NBT.A Understand the place value system.

- 5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left.
- 5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- 5.NBT.3 Read, write, and compare decimals to thousandths.
- (a) Read and write decimals to thousandths using base 10 numerals, number names, and expanded form.
- (b) Compare two decimals to thousandths based on the meanings of the digits in each place,

using $>$, $=$, $<$ symbols to record the results of comparisons.

- 5.NBT.4 Use place value understanding to round decimals to any place.

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $\frac{2}{3} + \frac{5}{4} = \frac{8}{12} + \frac{15}{12} = \frac{23}{12}$. (In general, $\frac{a}{b} + \frac{c}{d} = \frac{ad + bc}{bd}$.)
- 5.NF.2 Solve word problems involving addition and subtraction of fractions refer to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $\frac{2}{5} + \frac{1}{2} = \frac{3}{7}$, by observing that $\frac{3}{7} < \frac{1}{2}$.

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.3 Interpret a fraction as division of the numerator by the denominator ($\frac{a}{b} = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $\frac{3}{4}$ as the result of dividing 3 by 4, noting that $\frac{3}{4}$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $\frac{3}{4}$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?
- 5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- (a.) Interpret the product $(\frac{a}{b}) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(\frac{2}{3}) \times 4 = \frac{8}{3}$, and create a story context for this equation. Do the same with $(\frac{2}{3}) \times (\frac{4}{5}) = \frac{8}{15}$. (In general, $(\frac{a}{b}) \times (\frac{c}{d}) = \frac{ac}{bd}$.)
- (b.) Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.5 Interpret multiplication as scaling (resizing), by:
- (a.) Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.
- (b.) Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $\frac{a}{b} = \frac{(n \times a)}{(n \times b)}$ to the effect of multiplying $\frac{a}{b}$ by 1.
- 5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.

- (a.) Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
- (b.) Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.
- (c.) Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?

5.MD.C Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

- **5.MD.3** Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- (a.) 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.
- (b.) A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.
- **5.MD.4** Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- **5.MD.5** Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- (a.) Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- (b.) Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.
- (c.) 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.

Supporting Standard Clusters

5.MD.A Convert like measurement units within a given measurement system.

- **5.MD.1** Convert amount different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.MD.B Represent and interpret data.

- **5.MD.2** Make a line plot to display a data set of measurements in fractions of a unit ($1/2$, $1/4$, $1/8$). Use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.

5.OA.A Write and interpret numerical expressions.

- **5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate

expressions with these symbols.

- 5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product

5.OA.B Analyze patterns and relationships.

- 5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule “Add 3” and the starting number 0, and given the rule “Add 6” and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

5.G.A Graph points on the coordinate plane to solve real-world and mathematical problems.

- 5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- 5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

5.G.B Classify two-dimensional figures into categories based on their properties.

- 5.G.3 Understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- 5.G.4 Classify two-dimensional figures in a hierarchy based on properties.

Unit 1 - Expressions, Equations & Volume

Unit Overview: In the first unit, students use the study of volume to review and extend a host of skills and concepts related to multiplication.

Unit Standards

Priority Standards

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.

5.MD.C Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

- 5.MD.3 Recognize volume as an attribute of solid figures and understand concepts of volume measurement.
- (a.) 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.
- (b.) A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.

- 5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- 5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- (a.) Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.

Supporting Standards

5.OA.A Write and interpret numerical expressions.

- 5.OA.1 Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.
- 5.OA.2 Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as $2 \times (8 + 7)$. Recognize that $3 \times (18932 + 921)$ is three times as large as $18932 + 921$, without having to calculate the indicated sum or product

Prior Grade/Course Priority Standards - Reviewed in Unit

4.OA.A Use the four operations with the whole numbers to solve problems.

- 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.

4.NBT.B Use place value understanding and properties of operations to perform multi-digit arithmetic.

- 4.NBT.5 Multiply a whole number (up to) a 4-digit number by a 1-digit number using strategies based on place value and the properties of operations, and multiply two 2-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the multiplication calculation using equations, rectangular arrays, and/or area models.
- 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, arrays, and/or area models.

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none"> • Module 1, Session 2 • Module 1, Session 4 • Module 1 Session 1 • Module 2, Session 3 • Module 2, Session 5 • Module 3, Session 1 • Module 3, Session 2 	MP.6 <ul style="list-style-type: none"> • Module 3, Session 1 • Module 3, Session 4

Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> ● Module 1, Session 1 ● Module 2, Session 4 ● Module 3, Session 4 ● Module 4, Session 3 ● Module 4, Session 4 	MP.3 <ul style="list-style-type: none"> ● Module 1, Session 1 ● Module 1 Session 5 ● Module 2, Session 2 ● Module 2, Session 4 ● Module 2, Session 6 ● Module 3, Session 2
Modeling & Tools	MP.4 <ul style="list-style-type: none"> ● Module 2, Session 6 ● Module 3, Session 3 ● Module 4, Session 1 ● Module 4, Session 2 	MP.5
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> ● Module 2, Session 1 ● Module 2, Session 2 ● Module 2, Session 3 ● Module 2, Session 4 ● Module 2, Session 5 	MP.8 <ul style="list-style-type: none"> ● Module 1, Session 2 ● Module 1, Session 4 ● Module 1, Session 5 ● Module 3, Session 3 ● Module 3, Session 4 ● Module 4, Session 1 ● Module 4, Session 2 ● Module 4, Session 3 ● Module 4, Session 4

5th Grade Priority:

- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)
 - Module 3 Session 1 Pricing Baseballs
 - Module 3 Session 2 Multiplication and Volume Checkpoint
 - Module 3 Session 3 Using Multiplication Strategies
 - Module 4 Session 1 Reviewing Division with the Area Model
 - Module 4 Session 3 Quotients Win Day 1
 - Module 4 Session 4 Quotients Win Day 2
- I illustrate the division calculation by rectangular arrays and/or area models. (5.NBT.6)
 - Module 4 Session 1 Reviewing Division with the Area Model
 - Module 4 Session 3 Quotients Win Day 1
 - Module 4 Session 4 Quotients Win Day 2
- I recognize 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. (5.MD.3a)
 - Module 2 Session 2 Boxing Baseball Forum
- I recognize a solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. (5.MD.3b)
 - Module 1 Session 4 Boxing Baseballs
 - Module 1 Session 5 More Boxing Baseballs
 - Module 2 Session 2 Boxing Baseball Forum
 - Module 2 Session 2 Boxing Baseball Forum
 - Module 2 Session 5 The Multiple Game
 - Module 3 Session 1 Pricing Baseballs

- Module 3 Session 2 Multiplication and Volume Checkpoint
- I measure volume by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units. (5.MD.4)
 - Module 3 Session 2 Multiplication and Volume Checkpoint
- I represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. (5.MD.5a)
 - Module 2 Session 2 Boxing Baseball Forum
 - Module 2 Session 4 Cardboard Forum
 - Module 3 Session 2 Multiplication and Volume Checkpoint

5th Grade/Course Supporting:

- I evaluate (solve) numerical expressions with parentheses, brackets and braces. (5.OA.1)
 - Module 1 Session 4 Boxing Baseballs
 - Module 1 Session 5 More Boxing Baseballs
 - Module 2 Session 1 Numerical Expressions Checkpoint
 - Module 2 Session 3 How Much Cardboard
 - Module 2 Session 4 Cardboard Forum
 - Module 2 Session 5 The Multiple Game
 - Module 2 Session 6 Thinking about the Multiple Game
 - Module 3 Session 1 Pricing Baseballs
 - Module 3 Session 2 Multiplication and Volume Checkpoint
 - Module 3 Session 3 Using Multiplication Strategies
 - Module 3 Session 4 Beat the Calculator
 - Module 4 Session 2 Division with Remainders
- I apply the Order of Operations to evaluate expressions with parentheses, solve number sentences, write a number sentence that matches a word problem, or insert parentheses to make a true number sentence. (5.OA.2)
 - Module 1 Session 2 More About the Product Game
 - Module 1 Session 4 Boxing Baseballs
 - Module 2 Session 1 Numerical Expressions Checkpoint
 - Module 2 Session 2 Boxing Baseball Forum
 - Module 2 Session 3 How Much Cardboard
 - Module 2 Session 4 Cardboard Forum
 - Module 2 Session 5 The Multiple Game
 - Module 3 Session 1 Pricing Baseballs
 - Module 3 Session 2 Multiplication and Volume Checkpoint
 - Module 3 Session 3 Using Multiplication Strategies

4th Grade Priority Standards Reviewed:

- I solve multi-step word problems using all operations and write a corresponding number sentence using a variable for the unknown. (4.OA.3)
 - Module 4 Session 2 Division with Remainders
- I assess the reasonableness of answers using mental computation and estimation strategies including rounding (all operations). (4.OA.3)
 - Module 4 Session 2 Division with Remainders
- I find factor pairs and write a list of factors for any number up to 100. (4.OA.4)
 - Module 1 Session 1 Building a Community

- Module 1 Session 2 More About the Product Game
- Module 1 Session 4 Boxing Baseballs
- Module 1 Session 5 More Boxing Baseballs
- Module 2 Session 5 The Multiple Game
- Module 2 Session 6 Thinking about the Multiple Game
- I determine whether a whole number up to 100 is prime or composite. (4.OA.4)
 - Module 1 Session 1 Building a Community
 - Module 2 Session 6 Thinking about the Multiple Game
- I write multiples of single digit numbers, determine whether a given number is a multiple of a one-digit number, and recognize and determine that a whole number is a multiple of each of its factors. (4.OA.4)
 - Module 1 Session 1 Building a Community
 - Module 1 Session 2 More About the Product Game
 - Module 2 Session 6 Thinking about the Multiple Game
- I use basic fact knowledge to solve extended multiplication facts (4.NBT.5)
 - Module 3 Session 4 Beat the Calculator
- I multiply (up to) a 4-digit number by a 1-digit number using words, equations, arrays, and/or number models (4.NBT.5)
 - Module 2 Session 1 Numerical Expressions Checkpoint
 - Module 2 Session 3 How Much Cardboard
 - Module 2 Session 6 Thinking about the Multiple Game
 - Module 3 Session 1 Pricing Baseballs
 - Module 3 Session 2 Multiplication and Volume Checkpoint
 - Module 3 Session 3 Using Multiplication Strategies
 - Module 3 Session 4 Beat the Calculator
- I divide a 4-digit whole number by a 1-digit divisor (4.NBT.6)
 - Module 4 Session 1 Reviewing Division with the Area Model
 - Module 4 Session 2 Division with Remainders
 - Module 4 Session 3 Quotients Win Day 1
- I illustrate and explain division using words, equations, arrays, and/or numbers (4.NBT.6)
 - Module 4 Session 1 Reviewing Division with the Area Model
 - Module 4 Session 2 Division with Remainders
 - Module 4 Session 3 Quotients Win Day 1

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention

Unit 2 - Adding and Subtracting Fractions

Unit Overview: In this unit, students add and subtract fractions with unlike denominators, using a variety of strategies to find common denominators.

Unit Standards**Priority Standards****5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.**

- **5.NF.1** Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)
- **5.NF.2** Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result $2/5 + 1/2 = 3/7$, by observing that $3/7 < 1/2$.

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- **5.NF.3** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?
- **5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- (a.) Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)

Learning Targets**5th Grade Priority:****Mathematical Practice Standard Connections**

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none"> • Module 1, Session 5 • Module 2, Session 1 • Module 2, Session 4 • Module 2, Session 5 • Module 2, Session 6 	MP.6 <ul style="list-style-type: none"> • Module 2, Session 4

	<ul style="list-style-type: none"> • Module 3, Session 1 • Module 3, Session 3 • Module 4, Session 3 	
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> • Module 1, Session 5 • Module 2, Session 2 • Module 3, Session 5 • Module 4, Session 2 • Module 4, Session 3 	MP.3 <ul style="list-style-type: none"> • Module 1, Session 3 • Module 2, Session 2 • Module 2, Session 5 • Module 3, Session 4 • Module 4, Session 2 • Module 4, Session 3
Modeling & Tools	MP.4 <ul style="list-style-type: none"> • Module 1, Session 1 • Module 1, Session 3 • Module 1, Session 4 • Module 2, Session 3 • Module 3, Session 1 	MP.5 <ul style="list-style-type: none"> • Module 1, Session 4 • Module 2, Session 1 • Module 3, Session 3
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> • Module 2, Session 3 • Module 3, Session 2 • Module 4, Session 1 	MP.8 <ul style="list-style-type: none"> • Module 1, Session 1 • Module 2, Session 6 • Module 3, Session 2 • Module 3, Session 4 • Module 3, Session 5 • Module 4, Session 1

5th Grade Priority:

- I add and subtract decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 2 Session 4 Better Buy
 - Module 2 Session 5 Better Buy Forum
 - Module 3 Session 1 Buying Granola
- I name and describe equivalent fractions. (5.NF.1)
 - Module 1 Session 1 Using a Money Model
 - Module 1 Session 3 Clock Fractions
 - Module 1 Session 4 Introducing Clock Fractions Game
 - Module 1 Session 5 Which Model Works Best?
 - Module 2 Session 1 River Trail
 - Module 2 Session 2 River Trail Forum
 - Module 2 Session 6 Fraction Checkpoint
 - Module 3 Session 2 Finding Equivalent Fractions to Add and Subtract
 - Module 3 Session 4 Fraction Strategies Poster
 - Module 3 Session 5 Common Denominators
 - Module 4 Session 2 Simplifying Fractions
 - Module 4 Session 3 Fraction Problem Solving
- I add and subtract fractions and mixed numbers with unlike denominators. (5.NF.1)
 - Module 1 Session 1 Using a Money Model
 - Module 1 Session 3 Clock Fractions
 - Module 1 Session 4 Introducing Clock Fractions Game

- Module 1 Session 5 Which Model Works Best?
- Module 2 Session 1 River Trail
- Module 2 Session 2 River Trail Forum
- Module 2 Session 5 Better Buy Forum
- Module 2 Session 6 Fraction Checkpoint
- Module 3 Session 2 Finding Equivalent Fractions to Add and Subtract
- Module 3 Session 3 Working with Fractions Checkpoint
- Module 3 Session 4 Fraction Strategies Poster
- Module 3 Session 5 Common Denominators
- Module 4 Session 1 LCM & LCD
- I add and subtract fractions with unlike denominators, including those in number stories, and simplify my answers to lowest terms. (5.NF.2)
 - Module 1 Session 4 Introducing Clock Fractions Game
 - Module 1 Session 5 Which Model Works Best?
 - Module 2 Session 1 River Trail
 - Module 2 Session 2 River Trail Forum
 - Module 2 Session 5 Better Buy Forum
 - Module 2 Session 6 Fraction Checkpoint
 - Module 3 Session 2 Finding Equivalent Fractions to Add and Subtract
 - Module 3 Session 3 Working with Fractions Checkpoint
 - Module 3 Session 4 Fraction Strategies Poster
 - Module 4 Session 1 LCM & LCD
 - Module 4 Session 2 Simplifying Fractions
 - Module 4 Session 3 Fraction Problem Solving
- I use benchmark fractions to estimate the sum or difference of fractions and determine if an answer is reasonable. (5.NF.2)
 - Module 2 Session 3 Double Number Lines
 - Module 3 Session 2 Finding Equivalent Fractions to Add and Subtract
 - Module 3 Session 3 Working with Fractions Checkpoint
- I solve word problems involving division of whole numbers resulting in answers in the form of fractions or mixed numbers. (5.NF.3)
 - Module 2 Session 4 Better Buy
 - Module 2 Session 5 Better Buy Forum
 - Module 3 Session 1 Buying Granola
 - Module 2 Session 6 Fraction Checkpoint
 - Module 3 Session 3 Working with Fractions Checkpoint
- I multiply a fraction by a fraction, including those in word problems, and write a word problem that matches a situation. (5.NF.4a)
 - Module 2 Session 6 Fraction Checkpoint
- I interpret the product of a fraction multiplied by a whole number. (5.NF.4a)
 - Module 2 Session 1 River Trail
 - Module 2 Session 2 River Trail Forum
 - Module 2 Session 3 Double Number Lines
 - Module 2 Session 6 Fraction Checkpoint
 - Module 3 Session 3 Working with Fractions Checkpoint

5th Grade Supporting:

- None

4th Grade/Course Review:

- I can 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. (4.NF.1)
 - Module 1 Session 4 Introducing Clock Fractions Game
 - Module 4 Session 1 LCM & LCD
 - Module 4 Session 2 Simplifying Fractions
 - Module 4 Session 3 Fraction Problem Solving
- I can order and compare fractions with unlike numerators and denominators using $>$, $<$, or $=$ by thinking about benchmark fractions or creating equivalent fractions and can recognize that comparisons are valid only when the two fractions refer to the same whole. (4.NF.2)
 - Module 2 Session 5 Better Buy Forum
 - Module 4 Session 1 LCM & LCD
 - Module 4 Session 3 Fraction Problem Solving
- I convert fractions from tenths to hundredths and from hundredths to tenths (4.NF.5)
 - Module 1 Session 3 Clock Fractions
- I convert fractions to decimals and decimals to fractions (tenths and hundredths) (4.NF.6)
 - Module 1 Session 3 Clock Fractions

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention
ALEKS and Dreambox

Unit 3 - Place Value & Decimals

Unit Overview: In this unit, students study skills and concepts related to place value, from reading, writing, and comparing decimals to rounding and examining the decimal patterns of multiplying and dividing numbers by 10.

Unit Standards

Priority Standards

5.NBT.A Understand the place value system.

- 5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.
- 5.NBT.3 Read, write, and compare decimals to thousandths.
- (a) Read and write decimals to thousandths using base 10 numerals, number names, and expanded form.
- (b) Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, < symbols to record the results of comparisons.
- 5.NBT.4 Use place value understanding to round decimals to any place.

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)

Supporting Standards

5.MD.A Convert like measurement units within a given measurement system.

- 5.MD.1 Convert amount different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none"> • Module 1, Session 2 • Module 2, Session 2 • Module 2, Session 7 • Module 3, Session 1 • Module 3, Session 3 • Module 4, Session 2 	MP.6 <ul style="list-style-type: none"> • Module 1, Session 5 • Module 2, Session 4 • Module 2, Session 5
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> • Module 1, Session 3 	MP.3 <ul style="list-style-type: none"> • Module 2, Session 3

	<ul style="list-style-type: none"> • Module 2, Session 4 • Module 2, Session 5 • Module 4, Session 1 	<ul style="list-style-type: none"> • Module 2, Session 6 • Module 3, Session 2 • Module 4, Session 2
Modeling & Tools	MP.4 <ul style="list-style-type: none"> • Module 1, Session 4 • Module 2, Session 1 • Module 2, Session 2 • Module 2, Session 7 • Module 3, Session 2 • Module 3, Session 3 • Module 4, Session 1 	MP.5
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> • Module 1, Session 2 • Module 1, Session 4 • Module 2, Session 1 • Module 2, Session 3 • Module 3, Session 1 • Module 3, Session 4 • Module 4, Session 3 	MP.8 <ul style="list-style-type: none"> • Module 1, Session 3 • Module 1, Session 5 • Module 2, Session 6 • Module 3, Session 4 • Module 4, Session 3

5th Grade Priority:

- I understand that each place value space is 10 times greater than the place to its right and 1/10th of the place to its left. (5.NBT.1)
 - Module 1 Session 3 Multiplying and Dividing by Ten
 - Module 1 Session 4 The Great Wall of Base Ten
 - Module 1 Session 5 Modeling, Reading & Comparing Decimals
 - Module 2 Session 1 Extending the Great Wall
 - Module 2 Session 2 Draw and Compare Decimals
 - Module 2 Session 4 Target One
 - Module 3 Session 4 Place Value Patterns
- I explain patterns with multiplication with powers of 10 and explain patterns in the placement of the decimal point when it is multiplied or divided by power of 10. I use whole-number exponents to denote powers of 10. (5.NBT.2)
 - Module 1 Session 3 Multiplying and Dividing by Ten
 - Module 1 Session 4 The Great Wall of Base Ten
 - Module 3 Session 1 Checkpoint & Memory Bytes
 - Module 3 Session 3 Metric Conversions
 - Module 3 Session 4 Place Value Patterns
- I read and write numbers from the billions place to the thousandths place. (5.NBT.3a)
 - Module 1 Session 5 Modeling, Reading & Comparing Decimals
 - Module 2 Session 1 Extending the Great Wall
 - Module 2 Session 2 Draw and Compare Decimals
 - Module 2 Session 3 Round and Add Tenths
 - Module 2 Session 4 Target One
 - Module 2 Session 5 Charting Decimal & Fractions Equivalencies

- Module 2 Session 6 Fraction & Decimal Equivalencies
- Module 2 Session 7 Decimals on a Number Line
- I read, write, and compare decimals to the thousandths place using $>$, $<$, and $=$. (5.NBT.3b)
 - Module 1 Session 5 Modeling, Reading & Comparing Decimals
 - Module 2 Session 2 Draw and Compare Decimals
 - Module 2 Session 4 Target One
 - Module 2 Session 7 Decimals on a Number Line
 - Module 3 Session 1 Checkpoint & Memory Bytes
- I round numbers to any place. (5.NBT.4)
 - Module 2 Session 3 Round and Add Tenths
 - Module 2 Session 7 Decimals on a Number Line
 - Module 3 Session 1 Checkpoint & Memory Bytes
- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)
 - Module 4 Session 1 Writing Division Story Problems
 - Module 4 Session 2 Solving Student Posed Story Problems
 - Module 4 Session 3 Division Showdown
- I illustrate the division calculation by rectangular arrays and/or area models. (5.NBT.6)
 - Module 4 Session 1 Writing Division Story Problems
 - Module 4 Session 2 Solving Student Posed Story Problems
 - Module 4 Session 3 Division Showdown
- I add and subtract decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 1 Session 2 Beat the Calculator: Fractions
 - Module 2 Session 1 Extending the Great Wall
 - Module 2 Session 2 Draw and Compare Decimals
 - Module 2 Session 3 Round and Add Tenths
 - Module 2 Session 4 Target One
 - Module 2 Session 5 Charting Decimal & Fraction Equivalencies
 - Module 2 Session 6 Fraction & Decimal Equivalencies
 - Module 2 Session 7 Decimals on a Number Line
 - Module 3 Session 1 Checkpoint & Memory Bytes
 - Module 3 Session 2 Memory Bytes & More Math Forum
 - Module 3 Session 4 Place Value Patterns
- I add and subtract fractions and mixed numbers with unlike denominators. (5.NF.1)
 - Module 1 Session 2 Beat the Calculator: Fractions

5th Grade Supporting:

- I convert measurements within the US Customary and the Metric system to find equivalent amounts, including those in multi-step word problems. (5.MD.1)
 - Module 2 Session 7 Decimals on a Number Line
 - Module 3 Session 1 Checkpoint & Memory Bytes
 - Module 3 Session 3 Metric Conversions

Assessment Evidence

Performance Assessment Options

Other assessment options

<p><i>May include, but are not limited to the following:</i></p> <ul style="list-style-type: none"> ● Bridges Unit Pre Assessment ● Bridges Unit Checkpoints ● Bridges Unit Post Assessment 	<p><i>May include, but are not limited to the following:</i></p> <ul style="list-style-type: none"> ● Bridges Unit Observational Assessments ● Student Work Samples ● Classroom Exit Tickets
Digital Tools & Supplementary Resources	
<p>Bridges Intervention ALEKS and Dreambox</p>	

Unit 4 - Multiplying & Dividing Whole Numbers & Decimals
<p>Unit Overview: In this unit, students return to the study of multiplication and division strategies, including the standard multiplication algorithm.</p>
Unit Standards
<p>Priority Standards</p> <p>5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.</p> <ul style="list-style-type: none"> ● <u>5.NBT.5</u> Fluently multiply multi-digit whole numbers using the standard algorithm. ● <u>5.NBT.6</u> Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. ● <u>5.NBT.7</u> Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. <p>5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.</p> <ul style="list-style-type: none"> ● <u>5.NF.4</u> Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. ● (a.) Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.) <p>Supporting Standards</p> <p>5.MD.A Convert like measurement units within a given measurement system.</p> <ul style="list-style-type: none"> ● <u>5.MD.1</u> Convert amount different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems. <p>5.OA.A Write and interpret numerical expressions.</p> <ul style="list-style-type: none"> ● <u>5.OA.1</u> Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none"> ● Module 1, Session 3 ● Module 1, Session 4 ● Module 2, Session 1 ● Module 2, Session 2 ● Module 2, Session 3 ● Module 3, Session 7 	MP.6 <ul style="list-style-type: none"> ● Module 3, Session 1
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> ● Module 2, Session 4 ● Module 3, Session 7 ● Module 4, Session 1 ● Module 4, Session 2 ● Module 4, Session 3 ● Module 4, Session 4 	MP.3 <ul style="list-style-type: none"> ● Module 1, Session 2 ● Module 1, Session 4 ● Module 2, Session 1 ● Module 3, Session 1 ● Module 3, Session 5 ● Module 3, Session 6 ● Module 4, Session 1
Modeling & Tools	MP.4 <ul style="list-style-type: none"> ● Module 1, Session 3 ● Module 1, Session 4 ● Module 2, Session 2 ● Module 2, Session 3 ● Module 3, Session 2 ● Module 3, Session 3 ● Module 3, Session 4 ● Module 3, Session 6 ● Module 4, Session 3 ● Module 4, Session 4 	MP.5
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> ● Module 1, Session 2 ● Module 2, Session 4 ● Module 3, Session 2 ● Module 3, Session 3 ● Module 3, Session 4 ● Module 3, Session 5 	MP.8 <ul style="list-style-type: none"> ● Module 2, Session 4 ● Module 3, Session 2 ● Module 3, Session 3 ● Module 3, Session 4 ● Module 3, Session 5 ● Module 4, Session 2 ● Module 4, Session 3 ● Module 4, Session 4

5th Grade Priority:

- I fluently multiply multi-digit whole numbers using the standard algorithm. (5.NBT.5)
 - Module 3 Session 4 Array to Algorithm, Part 2
 - Module 3 Session 5 Practicing the Standard Algorithm
 - Module 3 Session 6 Multiplication Strategy Review
 - Module 3 Session 7 Choosing Strategies for Story Problems
 - Module 4 Session 1 Estimate and Check
- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a

whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)

- Module 1 Session 2 The Product Game, Version 2
- Module 2 Session 4 Over & Under
- Module 3 Session 7 Choosing Strategies for Story Problems
- Module 4 Session 1 Estimate and Check
- Module 4 Session 2 Multiplying to Divide, Part 1
- Module 4 Session 3 Multiplying to Divide, Part 2
- Module 4 Session 4 Lowest Remainder Wins
- I illustrate the division calculation by rectangular arrays and/or area models. (5.NBT.6)
 - Module 4 Session 2 Multiplying to Divide, Part 1
 - Module 4 Session 3 Multiplying to Divide, Part 2
 - Module 4 Session 4 Lowest Remainder Wins
- I add and subtract decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 1 Session 3 Callie's Cake Pops
 - Module 1 Session 4 Callie's Cake Pops Forum
- I multiply and divide decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 1 Session 3 Callie's Cake Pops
 - Module 1 Session 4 Callie's Cake Pops Forum
 - Module 2 Session 1 Multiplication Battle
 - Module 2 Session 2 Callie's Charts
 - Module 2 Session 3 Callie's Ratio Tables
 - Module 2 Session 4 Over & Under
 - Module 3 Session 6 Multiplication Strategy Review
 - Module 3 Session 7 Choosing Strategies for Story Problems
- I interpret the product of a fraction multiplied by a whole number. (5.NF.4a)
 - Module 1 Session 4 Callie's Cake Pops Forum
 - Module 2 Session 1 Multiplication Battle
 - Module 2 Session 2 Callie's Charts
 - Module 2 Session 3 Callie's Ratio Tables
 - Module 3 Session 1 Sketching Arrays & Partial Products
- I compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication (5×4 is twice as big as 5×2). (5.NF.5a)
 - Module 1 Session 3 Callie's Cake Pops
- I identify the length, width and height of a rectangular prism to calculate the area of its base, and then find its volume. (5.MD.5b)
 - Module 3 Session 7 Choosing Strategies for Story Problems

5th Grade Supporting:

- I convert measurements within the US Customary and the Metric system to find equivalent amounts, including those in multi-step word problems. (5.MD.1)
 - Module 4 Session 1 Estimate and Check
 - Module 4 Session 3 Multiplying to Divide, Part 2
- I evaluate (solve) numerical expressions with parentheses, brackets and braces. (5.OA.1)
 - Module 2 Session 1 Multiplication Battle
 - Module 3 Session 1 Sketching Arrays & Partial Products

- I apply the Order of Operations to evaluate expressions with parentheses, solve number sentences, write a number sentence that matches a word problem, or insert parentheses to make a true number sentence. (5.OA.2)
 - Module 1 Session 3 Callie’s Cake Pops

4th Grade/Course Review:

- I write multiples of single digit numbers, determine whether a given number is a multiple of a one-digit number, and recognize and determine that a whole number is a multiple of each of its factors. (4.OA.4)
 - Module 1 Session 2 The Product Game, Version 2
- I multiply (up to) a 4-digit number by a 1-digit number using words, equations, arrays, and/or number models (4.NBT.5)
 - Module 1 Session 2 The Product Game, Version 2
 - Module 2 Session 1 Multiplication Battle
 - Module 2 Session 2 Callie’s Charts
 - Module 2 Session 4 Over & Under
 - Module 3 Session 1 Sketching Arrays & Partial Products
 - Module 3 Session 2 Four Partial Products
 - Module 3 Session 3 Array to Algorithm, Part 1
 - Module 3 Session 4 Array to Algorithm, Part 2
 - Module 3 Session 6 Multiplication Strategy Review
 - Module 3 Session 7 Choosing Strategies for Story Problems
- I divide a 4-digit whole number by a 1-digit divisor (4.NBT.6)
 - Module 1 Session 2 The Product Game, Version 2

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention
ALEKS and Dreambox

Unit 5 - Multiplying & Dividing Fractions

Unit Overview: In Unit 5, students extend their understandings of multiplication and division to working with fractions.

Unit Standards

Priority Standards

5.NF.A Use equivalent fractions as a strategy to add and subtract fractions.

- 5.NF.1 Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, $2/3 + 5/4 = 8/12 + 15/12 = 23/12$. (In general, $a/b + c/d = (ad + bc)/bd$.)

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- (a.) Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
- (b.) Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.5 Interpret multiplication as scaling (resizing), by:
 - (b.) Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.
- 5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
 - (a.) Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
 - (b.) Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.
 - (c.) Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none">• Module 1, Session 3• Module 1, Session 5	MP.6

	<ul style="list-style-type: none"> • Module 2, Session 1 • Module 2, Session 2 • Module 2, Session 3 • Module 2, Session 5 • Module 3, Session 1 • Module 3, Session 2 • Module 3, Session 4 • Module 4, Session 3 • Module 4, Session 4 • Module 4, Session 5 	
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> • Module 1, Session 2 • Module 1, Session 3 • Module 2, Session 4 • Module 3, Session 3 	MP.3 <ul style="list-style-type: none"> • Module 1, Session 2 • Module 1, Session 4 • Module 3, Session 1 • Module 3, Session 2
Modeling & Tools	MP.4 <ul style="list-style-type: none"> • Module 2, Session 1 • Module 2, Session 2 • Module 2, Session 3 • Module 2, Session 5 • Module 3, Session 4 • Module 4, Session 1 • Module 4, Session 2 • Module 4, Session 3 • Module 4, Session 4 • Module 4, Session 5 	MP.5
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> • Module 1, Session 5 	MP.8 <ul style="list-style-type: none"> • Module 1, Session 4 • Module 2, Session 4 • Module 3, Session 3 • Module 4, Session 1 • Module 4, Session 2 • Module 4, Session 3 • Module 4, Session 4 • Module 4, Session 5

5th Grade Priority:

- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)
 - Module 4 Session 1 Reviewing Sharing and Grouping Division
- I illustrate the division calculation by rectangular arrays and/or area models. (5.NBT.6)
 - Module 4 Session 1 Reviewing Sharing and Grouping Division
- I add and subtract fractions and mixed numbers with unlike denominators. (5.NF.1)
 - Module 1 Session 2 Target One
 - Module 1 Session 3 Fraction Story Problems
 - Module 1 Session 4 Sharing Strategies
 - Module 1 Session 5 Trading Places
 - Module 2 Session 1 Geoboard Perimeters

- I multiply a fraction by a fraction, including those in word problems, and write a word problem that matches a situation. (5.NF.4a)
 - Module 2 Session 2 Target One
 - Module 1 Session 3 Fraction Story Problems
 - Module 1 Session 4 Sharing Strategies
 - Module 1 Session 5 Trading Places
 - Module 2 Session 1 Geoboard Perimeters
 - Module 2 Session 3 Multiplying Fractions with Area Model
 - Module 2 Session 4 Creating a Collection of Arrays
 - Module 2 Session 5 Modeling Fraction Problems
 - Module 3 Session 1 Fraction Multiplication Story Problems
 - Module 3 Session 2 Fraction Multiplication Forum
 - Module 3 Session 3 Generalization About Multiplying with Fractions
- I interpret the product of a fraction multiplied by a whole number. (5.NF.4a)
 - Module 2 Session 4 Creating a Collection of Arrays
- I find the area of a rectangle with fractional dimensions. (5.NF.4b)
 - Module 2 Session 3 Multiplying Fractions with Area Model
 - Module 2 Session 4 Creating a Collection of Arrays
 - Module 2 Session 5 Modeling Fraction Problems
 - Module 3 Session 1 Fraction Multiplication Story Problems
 - Module 3 Session 2 Fraction Multiplication Forum
 - Module 3 Session 3 Generalization About Multiplying with Fractions
- I find the area of a rectangle with fractional sides by tiling (grid paper). (5.NF.4b)
 - Module 2 Session 3 Multiplying Fractions with Area Model
 - Module 2 Session 4 Creating a Collection of Arrays
 - Module 2 Session 5 Modeling Fraction Problems
 - Module 3 Session 1 Fraction Multiplication Story Problems
 - Module 3 Session 2 Fraction Multiplication Forum
 - Module 3 Session 3 Generalization About Multiplying with Fractions
- I compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication (5×4 is twice as big as 5×2). (5.NF.5a)
 - Module 2 Session 4 Creating a Collection of Arrays
 - Module 2 Session 5 Modeling Fraction Problems
 - Module 3 Session 3 Generalization About Multiplying with Fractions
- I explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number. (5.NF.5b)
 - Module 1 Session 3 Fraction Story Problems
 - Module 2 Session 4 Creating a Collection of Arrays
 - Module 2 Session 5 Modeling Fraction Problems
 - Module 3 Session 3 Generalization About Multiplying with Fractions
- I explain why, when creating an equivalent fraction, multiplying a numerator and denominator by the same number is multiplying by one. (5.NF.5b)
 - Module 2 Session 4 Creating a Collection of Arrays
 - Module 2 Session 5 Modeling Fraction Problems
- I multiply a fraction by a whole number and mixed numbers, including those in word problems. (5.NF.6)
 - Module 2 Session 3 Multiplying Fractions with Area Model

- Module 3 Session 1 Fraction Multiplication Story Problems
- Module 3 Session 2 Fraction Multiplication Forum
- I interpret a fraction as division of the numerator by the denominator. (5.NF.7a)
 - Module 4 Session 2 Grouping
 - Module 4 Session 3 Dividing a Whole Number by a Fraction
 - Module 4 session 4 Sharing Stories
 - Module 4 Session 5 Dividing a Fraction by a whole number
- I interpret division of a whole number by a unit fraction ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{6}$) using models and the relationship between multiplication and division. (5.NF.7b)
 - Module 4 Session 2 Grouping Stories
 - Module 4 Session 3 Dividing a Whole Number by a Fraction
 - Module 4 session 4 Sharing Stories
 - Module 4 Session 5 Dividing a Fraction by a whole number
- I divide a whole number by a fraction and divide a fraction by a whole number, including those in real-world problems. (5.NF.7c)
 - Module 4 Session 2 Grouping Stories
 - Module 4 Session 3 Dividing a Whole Number by a Fraction
 - Module 4 session 4 Sharing Stories
 - Module 4 Session 5 Dividing a Fraction by a whole number

5th Grade Supporting:

- I convert measurements within the US Customary and the Metric system to find equivalent amounts, including those in multi-step word problems. (5.MD.1)
 - Module 1 Session 3 Fraction Story Problems

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention
ALEKS and Dreambox

Unit 6 - Graphing, Geometry & Volume

Unit Overview: In this unit, students are formally introduced to several new geometric concepts, including coordinate graphing and the use of hierarchies to classify two-dimensional shapes by their properties. Students also review volume.

Unit Standards

Priority Standards

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- (a.) Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
- (b.) Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.

5.MD.C Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

- 5.MD.4 Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.
- 5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- (a.) Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- (b.) Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.
- (c.) 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.

Supporting Standards

5.OA.B Analyze patterns and relationships.

- 5.OA.3 Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.

5.G.A Graph points on the coordinate plane to solve real-world and mathematical problems.

- 5.G.1 Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).
- 5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant

of the coordinate plane, and interpret coordinate values of points in the context of the situation.

5.G.B Classify two-dimensional figures into categories based on their properties.

- 5.G.3 Understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.
- 5.G.4 Classify two-dimensional figures in a hierarchy based on properties.

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none"> ● Module 2, Session 3 ● Module 2, Session 4 ● Module 3, Session 5 ● Module 4, Session 1 ● Module 4, Session 2 ● Module 4, Session 3 	MP.6 <ul style="list-style-type: none"> ● Module 1, Session 7 ● Module 3, Session 4
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> ● Module 1, Session 5 ● Module 1, Session 6 ● Module 3, Session 1 ● Module 3, Session 2 ● Module 3, Session 5 ● Module 4, Session 1 ● Module 4, Session 2 ● Module 4, Session 3 	MP.3 <ul style="list-style-type: none"> ● Module 1, Session 5 ● Module 1, Session 6 ● Module 1, Session 7 ● Module 2, Session 3 ● Module 2, Session 4 ● Module 3, Session 2 ● Module 3, Session 3
Modeling & Tools	MP.4 <ul style="list-style-type: none"> ● Module 1, Session 2 ● Module 1, Session 3 ● Module 2, Session 1 	MP.5 <ul style="list-style-type: none"> ● Module 1, Session 2 ● Module 1, Session 3 ● Module 2, Session 1 ● Module 3, Session 3
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> ● Module 1, Session 4 ● Module 2, Session 2 ● Module 3, Session 1 	MP.8 <ul style="list-style-type: none"> ● Module 1, Session 4 ● Module 2, Session 2 ● Module 3, Session 4

5th Grade Priority:

- I explain patterns with multiplication with powers of 10 and explain patterns in the placement of the decimal point when it is multiplied or divided by power of 10. I use whole-number exponents to denote powers of 10. (5.NBT.2)
 - Module 1 Session 7 Dragon’s Treasure
- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)
 - Module 3 Session 1 Back to Brad’s Baseballs
- I add and subtract decimals to hundredths using a variety of strategies (models, drawings and

- properties of operations). (5.NBT.7)
 - Module 1 Session 7 Dragon's Treasure
- I multiply and divide decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 1 Session 7 Dragon's Treasure t
- I multiply a fraction by a fraction, including those in word problems, and write a word problem that matches a situation. (5.NF.4a)
 - Module 4 Session 1 Introducing Banners & Flags
 - Module 4 Session 2 Dimensions & Area of Flags
 - Module 4 Session 3 Design a Flag Challenge
- I interpret the product of a fraction multiplied by a whole number. (5.NF.4a)
 - Module 4 Session 2 Dimensions & Area of Flags
 - Module 4 Session 3 Design a Flag Challenge
- I find the area of a rectangle with fractional dimensions. (5.NF.4b)
 - Module 4 Session 1 Introducing Banners & Flags
 - Module 4 Session 2 Dimensions & Area of Flags
 - Module 4 Session 3 Design a Flag Challenge
- I find the area of a rectangle with fractional sides by tiling (grid paper). (5.NF.4b)
 - Module 4 Session 1 Introducing Banners & Flags
 - Module 4 Session 2 Dimensions & Area of Flags
 - Module 4 Session 3 Design a Flag Challenge
- I multiply a fraction by a whole number and mixed numbers, including those in word problems. (5.NF.6)
 - Module 4 Session 1 Introducing Banners & Flags
 - Module 4 Session 2 Dimensions & Area of Flags
 - Module 4 Session 3 Design a Flag Challenge
- I recognize a solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units. (5.MD.3b)
 - Module 3 Session 1 Back to Brad's Baseballs
- I measure volume by counting unit cubes, using cubic cm, cubic in., cubic ft., and improvised units. (5.MD.4)
 - Module 3 Session 1 Back to Brad's Baseballs
 - Module 3 Session 2 Matt's Marbles
- I represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. (5.MD.5a)
 - Module 3 Session 1 Back to Brad's Baseballs
 - Module 3 Session 2 Matt's Marbles
 - Module 3 Session 3 Matt's Marbles Forum
 - Module 3 Session 4 Finding the Volume of Prisms
- I identify the length, width and height of a rectangular prism to calculate the area of its base, and then find its volume. (5.MD.5b)
 - Module 3 Session 2 Matt's Marbles
 - Module 3 Session 3 Matt's Marbles Forum
 - Module 3 Session 4 Finding the Volume of Prisms
- I find the volume of a solid which is made up of two or more adjacent rectangular prisms. (5.MD.5c)
 - Module 3 Session 4 Finding the Volume of Prisms

5th Grade Supporting:

- I evaluate (solve) numerical expressions with parentheses, brackets and braces. (5.OA.1)
 - Module 3 Session 3 Matt's Marbles Forum
- I generate two numerical patterns given two given rules. (5.OA.3)
 - Module 1 Session 4 comparing Cube Sequences
 - Module 1 Session 5 Tile Pools
 - Module 1 Session 6 Anthony's Problems
 - Module 1 Session 7 Dragon's Treasure
- I identify relationships between corresponding terms. (5.OA.3)
 - Module 1 Session 4 comparing Cube Sequences
 - Module 1 Session 5 Tile Pools
 - Module 1 Session 6 Anthony's Problems
 - Module 1 Session 7 Dragon's Treasure
- I use a pair of perpendicular number lines, called axes, to define a coordinate system with the origin being (0,0) (5.G.1)
 - Module 1 Session 2 Coordinate Place Four
 - Module 1 Session 3 Discovering, Describing and Graphing Patterns
 - Module 1 Session 4 comparing Cube Sequences
 - Module 1 Session 5 Tile Pools
 - Module 1 Session 6 Anthony's Problems
 - Module 1 Session 7 Dragon's Treasure
- I understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis. (5.G.1)
 - Module 1 Session 2 Coordinate Place Four
 - Module 1 Session 4 comparing Cube Sequences
 - Module 1 Session 6 Anthony's Problems
 - Module 1 Session 7 Dragon's Treasure
 - Module 3 Session 3 Matt's Marbles Forum
- I represent real world and math problems by graphing points and can interpret coordinate values of the points, origin, and the coordinates of a defined coordinate system. (5.G.2)
 - Module 1 Session 3 Discovering, Describing and Graphing Patterns
 - Module 1 Session 4 comparing Cube Sequences
 - Module 1 Session 5 Tile Pools
 - Module 1 Session 6 Anthony's Problems
 - Module 1 Session 7 Dragon's Treasure
- I interpret coordinate values of points in the context of the situation. (5.G.2)
 - Module 1 Session 2 Coordinate Place Four
 - Module 1 Session 3 Discovering, Describing and Graphing Patterns
 - Module 1 Session 4 comparing Cube Sequences
 - Module 1 Session 5 Tile Pools
 - Module 1 Session 6 Anthony's Problems
 - Module 1 Session 7 Dragon's Treasure
- I describe and compare attributes of polygons and classify polygons based on those attributes. (5.G.3)
 - Module 2 Session 1 Classifying Triangles

- Module 2 Session 2 Classifying Quadrilaterals, Part 1
- Module 2 Session 3 Classifying Quadrilaterals, Part 2
- Module 2 Session 4 Hierarchy Riddles
- I classify two-dimensional figures in a hierarchy based on properties. (5.G.4)
 - Module 2 Session 1 Classifying Triangles
 - Module 2 Session 2 Classifying Quadrilaterals, Part 1
 - Module 2 Session 3 Classifying Quadrilaterals, Part 2
 - Module 2 Session 4 Hierarchy Riddles
 - Module 3 Session 1 Back to Brad’s Baseballs
 - Module 3 Session 3 Matt’s Marbles Forum

4th Grade/Course Review:

- I generate a number or shape pattern using a rule or find the rule, continue the pattern, and explain my thinking. (4.OA.5)
 - Module 1 Session 3 Discovering, Describing and Graphing Patterns
- I notice and identify features of a pattern that was created by a rule. (4.OA.5)
 - Module 1 Session 3 Discovering, Describing and Graphing Patterns

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention
ALEKS and Dreambox

Unit 7 - Division & Decimals

Unit Overview: In this unit, students continue their study of division, including its relationship to multiplication.

Unit Standards

Priority Standards

5.NBT.A Understand the place value system.

- 5.NBT.1 Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.
- 5.NBT.2 Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is

multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

- **5.NBT.6** Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- **5.NBT.7** Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- **5.NF.3** Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret $3/4$ as the result of dividing 3 by 4, noting that $3/4$ multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size $3/4$. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?
- **5.NF.4** Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- (a.) Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
- **5.NF.7** Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
- (a.) Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for $(1/3) \div 4$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $(1/3) \div 4 = 1/12$ because $(1/12) \times 4 = 1/3$.
- (b.) Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for $4 \div (1/5)$, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that $4 \div (1/5) = 20$ because $20 \times (1/5) = 4$.
- (c.) Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?

Supporting Standards

5.OA.A Write and interpret numerical expressions.

- **5.OA.1** Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections

Habits of Mind	MP.1 <ul style="list-style-type: none"> Module 1, Session 2 Module 1, Session 4 Module 1, Session 6 Module 2, Session 1 Module 2, Session 5 	MP.6 <ul style="list-style-type: none"> Module 2, Session 1
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> Module 1, Session 2 Module 1, Session 5 Module 2, Session 5 Module 3, Session 2 Module 3, Session 3 	MP.3 <ul style="list-style-type: none"> Module 1, Session 3 Module 1, Session 5 Module 2, Session 2 Module 2, Session 4 Module 2, Session 6
Modeling & Tools	MP.4 <ul style="list-style-type: none"> Module 1, Session 3 Module 1, Session 6 Module 2, Session 3 Module 2, Session 4 Module 3, Session 4 Module 4, Session 1 Module 4, Session 2 Module 4, Session 3 	MP.5 <ul style="list-style-type: none"> Module 4, Session 2 Module 4, Session 3
Seeing Structure & Generalizing	MP.7 <ul style="list-style-type: none"> Module 3, Session 1 Module 3, Session 4 Module 4, Session 1 	MP.8 <ul style="list-style-type: none"> Module 1, Session 4 Module 2, Session 2 Module 2, Session 3 Module 2, Session 6 Module 3, Session 1 Module 3, Session 2 Module 3, Session 3

5th Grade Priority:

- I understand that each place value space is 10 times greater than the place to its right and 1/10th of the place to its left. (5.NBT.1)
 - Module 4 Session 1 Building a Deck
- I use basic facts knowledge to solve extended multiplication facts. (5.NBT.2)
 - Module 3 Session 1 Powers & Patterns
 - Module 3 Session 2 Multiplying by Powers of Ten
 - Module 3 Session 3 Dividing by Powers of Ten
 - Module 4 Session 1 Building a Deck
- I explain patterns with multiplication with powers of 10 and explain patterns in the placement of the decimal point when it is multiplied or divided by power of 10. I use whole-number exponents to denote powers of 10. (5.NBT.2)
 - Module 1 Session 2 Partial Quotients
 - Module 3 Session 1 Powers & Patterns
 - Module 3 Session 2 Multiplying by Powers of Ten

- Module 3 Session 3 Dividing by Powers of Ten
- Module 3 Session 4 Multiplying Decimals
- Module 4 Session 1 Building a Deck
- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)
 - Module 1 Session 2 Partial Quotients
 - Module 1 Session 3 Roll Five
 - Module 1 Session 4 Fruit Pizza
 - Module 1 Session 5 Fruit Pizza Forum
 - Module 1 Session 6 Division Checkpoint
 - Module 2 Session 1 Division is Division
 - Module 2 Session 2 Story Problems Forum
 - Module 2 Session 3 Quotients Race to One Hundred
 - Module 2 Session 4 Overs & Unders
 - Module 2 Session 5 Division Story Problems
 - Module 2 Session 6 Discussing Remainders
 - Module 3 Session 1 Powers & Patterns
- I illustrate the division calculation by rectangular arrays and/or area models. (5.NBT.6)
 - Module 1 Session 2 Partial Quotients
 - Module 1 Session 3 Roll Five
 - Module 1 Session 6 Division Checkpoint
 - Module 2 Session 3 Quotients Race to One Hundred
 - Module 2 Session 4 Overs & Unders
 - Module 2 Session 5 Division Story Problems
 - Module 2 Session 6 Discussing Remainders
 - Module 3 Session 1 Powers & Patterns
- I add and subtract decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 3 Session 2 Multiplying by Powers of Ten
 - Module 3 Session 3 Dividing by Powers of Ten
 - Module 3 Session 4 Multiplying Decimals
 - Module 4 Session 1 Building a Deck
 - Module 4 Session 2 Decimal Division with Money
 - Module 4 Session 3 Using Models & Strategies to Dividing with Decimals
- I multiply and divide decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 3 Session 2 Multiplying by Powers of Ten
 - Module 3 Session 3 Dividing by Powers of Ten
 - Module 3 Session 4 Multiplying Decimals
 - Module 4 Session 1 Building a Deck
 - Module 4 Session 2 Decimal Division with Money
 - Module 4 Session 3 Using Models & Strategies to Dividing with Decimals
- I solve word problems involving division of whole numbers resulting in answers in the form of fractions or mixed numbers. (5.NF.3)
 - Module 1 Session 4 Fruit Pizza
 - Module 2 Session 5 Division Story Problems
 - Module 2 Session 6 Discussing Remainders

- I multiply a fraction by a fraction, including those in word problems, and write a word problem that matches a situation. (5.NF.4a)
 - Module 1 Session 5 Fruit Pizza Forum
 - Module 1 Session 6 Division Checkpoint
- I interpret the product of a fraction multiplied by a whole number. (5.NF.4a)
 - Module 1 Session 5 Fruit Pizza Forum
 - Module 1 Session 6 Division Checkpoint
 - Module 3 Session 2 Multiplying by Powers of Ten
- I interpret a fraction as division of the numerator by the denominator. (5.NF.7a)
 - Module 2 Session 1 Division is Division
 - Module 2 Session 3 Quotients Race to One Hundred
 - Module 2 Session 4 Overs & Unders
- I interpret division of a whole number by a unit fraction ($\frac{1}{2}$, $\frac{1}{3}$, $\frac{1}{6}$) using models and the relationship between multiplication and division. (5.NF.7b)
 - Module 1 Session 5 Fruit Pizza Forum
 - Module 1 Session 6 Division Checkpoint
 - Module 2 Session 1 Division is Division
 - Module 2 Session 3 Quotients Race to One Hundred
 - Module 2 Session 4 Overs & Unders
- I divide a whole number by a fraction and divide a fraction by a whole number, including those in real-world problems. (5.NF.7c)
 - Module 1 Session 4 Fruit Pizza
 - Module 1 Session 5 Fruit Pizza Forum
 - Module 1 Session 6 Division Checkpoint
 - Module 2 Session 1 Division is Division
 - Module 2 Session 2 Story Problems Forum
 - Module 2 Session 3 Quotients Race to One Hundred
 - Module 2 Session 4 Overs & Unders

5th Grade Supporting:

- I evaluate (solve) numerical expressions with parentheses, brackets and braces. (5.OA.1)
 - Module 1 Session 3 Roll Five

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention
ALEKS and Dreambox

Unit 8 - Solar Design

Unit Overview: In the final unit of the year, students design and build scaled model houses that incorporate solar energy features.

Unit Standards

Priority Standards

5.NBT.B Perform operations with multi-digit whole numbers and with decimals to hundredths.

- 5.NBT.5 Fluently multiply multi-digit whole numbers using the standard algorithm.
- 5.NBT.6 Find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.
- 5.NBT.7 Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

5.NF.B Apply and extend previous understandings of multiplication and division to multiply and divide fractions.

- 5.NF.4 Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
- (a.) Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. For example, use a visual fraction model to show $(2/3) \times 4 = 8/3$, and create a story context for this equation. Do the same with $(2/3) \times (4/5) = 8/15$. (In general, $(a/b) \times (c/d) = ac/bd$.)
- (b.) Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.
- 5.NF.6 Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
- 5.NF.7 Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.
- (c.) Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share $1/2$ lb of chocolate equally? How many $1/3$ -cup servings are in 2 cups of raisins?

5.MD.C Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

- 5.MD.5 Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.
- (a.) Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.
- (b.) Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real world and mathematical problems.

Supporting Standards

5.MD.A Convert like measurement units within a given measurement system.

- 5.MD.1 Convert amount different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.

5.G.A Graph points on the coordinate plane to solve real-world and mathematical problems.

- 5.G.2 Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.

Learning Targets

5th Grade Priority:

Mathematical Practice Standard Connections		
Habits of Mind	MP.1 <ul style="list-style-type: none"> • Module 2, Session 4 • Module 2, Session 5 • Module 3, Session 1 • Module 4, Session 2 	MP.6 <ul style="list-style-type: none"> • Module 1, Session 1 • Module 1, Session 2 • Module 1, Session 3 • Module 1, Session 4 • Module 1, Session 5 • Module 1, Session 6 • Module 2, Session 6 • Module 3, Session 2 • Module 3, Session 4 • Module 4, Session 2
Reasoning & Explaining	MP.2 <ul style="list-style-type: none"> • Module 1, Session 3 • Module 1, Session 5 • Module 2, Session 1 • Module 2, Session 2 • Module 2, Session 3 • Module 2, Session 4 • Module 3, Session 2 • Module 3, Session 3 • Module 4, Session 1 	MP.3 <ul style="list-style-type: none"> • Module 2, Session 3 • Module 2, Session 5 • Module 3, Session 1 • Module 4, Session 3
Modeling & Tools	MP.4 <ul style="list-style-type: none"> • Module 1, Session 2 • Module 2, Session 2 • Module 3, Session 3 • Module 3, Session 4 • Module 3, Session 5 • Module 4, Session 1 • Module 4, Session 3 	MP.5 <ul style="list-style-type: none"> • Module 1, Session 1 • Module 1, Session 4 • Module 1, Session 6 • Module 2, Session 1 • Module 2, Session 2 • Module 2, Session 6 • Module 3, Session 5 • Module 4, Session 2
Seeing Structure & Generalizing	MP.7	MP.8

5th Grade Priority:

- I fluently multiply multi-digit whole numbers using the standard algorithm. (5.NBT.5)
 - Module 2 Session 3 Window Orientation
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
 - Module 4 Session 1 Testing & Modifying Our Houses
- I divide a 4 digit whole number by up to a 2-digit divisor, generate an answer in the form of a whole number or mixed number, and check my calculation using multiplication. (5.NBT.6)
 - Module 1 Session 5 Varying the Surface Area
 - Module 2 Session 3 Window Orientation
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
- I add and subtract decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 2 Session 3 Window Orientation
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
- I multiply and divide decimals to hundredths using a variety of strategies (models, drawings and properties of operations). (5.NBT.7)
 - Module 2 Session 3 Window Orientation
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 2 Investigating Solar Energy Devices
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
- I interpret the product of a fraction multiplied by a whole number. (5.NF.4a)
 - Module 2 Session 3 Window Orientation
 - Module 2 Session 4 Insulating Materials
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 2 Investigating Solar Energy Devices
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
 - Module 4 Session 1 Testing & Modifying Our Houses
- I find the area of a rectangle with fractional dimensions. (5.NF.4b)
 - Module 2 Session 4 Insulating Materials
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 2 Investigating Solar Energy Devices
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
 - Module 4 Session 1 Testing & Modifying Our Houses

- I multiply a fraction by a whole number and mixed numbers, including those in word problems. (5.NF.6)
 - Module 1 Session 1 Introducing Solar Energy
 - Module 2 Session 3 Window Orientation
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
 - Module 4 Session 1 Testing & Modifying Our Houses
- I divide a whole number by a fraction and divide a fraction by a whole number, including those in real-world problems. (5.NF.7c)
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
- I represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. (5.MD.5a)
 - Module 1 Session 5 Varying the Surface Area
 - Module 1 Session 6 Building a Solar Collector
 - Module 2 Session 2 Introducing Solar Home Design
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
- I identify the length, width and height of a rectangular prism to calculate the area of its base, and then find its volume. (5.MD.5b)
 - Module 1 Session 4 Collecting Solar Energy
 - Module 1 Session 5 Varying the Surface Area
 - Module 1 Session 6 Building a Solar Collector
 - Module 2 Session 2 Introducing Solar Home Design
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House

5th Grade Supporting:

- I convert measurements within the US Customary and the Metric system to find equivalent amounts, including those in multi-step word problems. (5.MD.1)
 - Module 2 Session 3 Window Orientation
 - Module 2 Session 5 Insulating Our Houses
 - Module 3 Session 3 Planning Our Model Solar House
 - Module 3 Session 4 Designing Our Model Solar House
 - Module 3 Session 5 Building Our Model Solar House
 - Module 4 Session 1 Testing & Modifying Our Houses
- I evaluate (solve) numerical expressions with parentheses, brackets and braces. (5.OA.1)
 - Module 1 Session 1 Introducing Solar Energy
- I represent real world and math problems by graphing points and can interpret coordinate values of the points, origin, and the coordinates of a defined coordinate system. (5.G.2)
 - Module 1 Session 2 Converting Solar Energy to Heat
 - Module 1 Session 3 Concentrating Solar Energy
 - Module 1 Session 4 Collecting Solar Energy

- Module 2 Session 1 Investigating Earth Materials
- Module 2 Session 2 Introducing Solar Home Design
- Module 2 Session 4 Insulating Materials
- Module 2 Session 6 Testing Our Insulated Houses
- Module 3 Session 1 Improving Our House’s Efficiency
- Module 4 Session 1 Testing & Modifying Our Houses
- I interpret coordinate values of points in the context of the situation. (5.G.2)
 - Module 1 Session 2 Converting Solar Energy to Heat
 - Module 1 Session 3 Concentrating Solar Energy
 - Module 1 Session 4 Collecting Solar Energy
 - Module 2 Session 1 Investigating Earth Materials
 - Module 2 Session 2 Introducing Solar Home Design
 - Module 2 Session 3 Window Orientation
 - Module 2 Session 4 Insulating Materials
 - Module 2 Session 6 Testing Our Insulated Houses
 - Module 3 Session 1 Improving Our House’s Efficiency
 - Module 4 Session 1 Testing & Modifying Our Houses

Assessment Evidence

Performance Assessment Options

May include, but are not limited to the following:

- Bridges Unit Pre Assessment
- Bridges Unit Checkpoints
- Bridges Unit Post Assessment

Other assessment options

May include, but are not limited to the following:

- Bridges Unit Observational Assessments
- Student Work Samples
- Classroom Exit Tickets

Digital Tools & Supplementary Resources

Bridges Intervention
ALEKS and Dreambox