Grade Five Mathematics

Domain ***Operations and Algebraic Thinking***

Cluster ***Write and interpret numerical expressions.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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

   Learning Targets:
   - I can use parentheses, brackets, or braces to group an expression within a multi-step numerical expression.
   - I can evaluate numerical expressions with parentheses, brackets, or braces.

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 x (8 + 7). Recognize that 3 x (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.

   Learning Targets:
   - I can write and interpret a simple numeric expression (e.g., "Twice as large as the sum of 4 + 3" written as "2 x [4 + 3]").

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Use the four operations with whole numbers to solve problems.

1. Interpret a multiplication equation as a comparison; e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison; e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
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.

Gain familiarity with factors and multiples.

4. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Progression to Sixth Grade

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Write and evaluate numerical expressions involving whole-number exponents.
2. Write, read, and evaluate expressions in which letters stand for numbers.
   a. Write expressions that record operations with numbers and with letters standing for numbers.
      For example, express the calculation "Subtract y from 5" as 5 – y.
   b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
      For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.
   c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
      For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2.
3. Apply the properties of operations to generate equivalent expressions.
   For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.
4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is

	substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.* ***Reason about and solve one-variable equations and inequalities.*** 5. Understand solving an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. 6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. 7. Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all nonnegative rational numbers. 8. Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. ***Represent and analyze quantitative relationships between dependent and independent variables.*** 9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*
Content Vocabulary • numerical expression • parentheses • brackets • braces	**Academic Vocabulary** • evaluate • analyze • represent

Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain ***Operations and Algebraic Thinking***

Cluster ***Analyze patterns and relationships.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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.

Learning Targets:

- I can generate a rule for a given numerical pattern.
- I can generate a numerical pattern when given a rule.
- I can understand how patterns can be represented on a coordinate plane.
- I can form ordered pairs out of corresponding terms from each pattern and graph them on a coordinate plane.
- I can identify and explain relationships between corresponding terms from two numerical patterns.

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Use the four operations with whole numbers to solve problems.

1. Interpret a multiplication equation as a comparison; e.g., interpret 35 = 5 x 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations.
2. Multiply or divide to solve word problems involving multiplicative comparison; e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.
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.

Gain familiarity with factors and multiples.

4. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.

Progression to Sixth Grade

Apply and extend previous understandings of arithmetic to algebraic expressions.

1. Write and evaluate numerical expressions involving whole-number exponents.
2. Write, read, and evaluate expressions in which letters stand for numbers.
   a. Write expressions that record operations with numbers and with letters standing for numbers.
      For example, express the calculation "Subtract y from 5" as 5 – y.
   b. Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, coefficient); view one or more parts of an expression as a single entity.
      For example, describe the expression 2 (8 + 7) as a product of two factors; view (8 + 7) as both a single entity and a sum of two terms.
   c. Evaluate expressions at specific values of their variables. Include expressions that arise from formulas used in real-world problems. Perform arithmetic operations, including those involving whole-number exponents, in the conventional order when there are no parentheses to specify a particular order (Order of Operations).
      For example, use the formulas V = s3 and A = 6 s2 to find the volume and surface area of a cube with sides of length s = 1/2.
3. Apply the properties of operations to generate equivalent expressions.
   For example, apply the distributive property to the expression 3 (2 + x) to produce the equivalent expression 6 + 3x; apply the distributive property to the expression 24x + 18y to produce the equivalent expression 6 (4x + 3y); apply properties of operations to y + y + y to produce the equivalent expression 3y.
4. Identify when two expressions are equivalent (i.e., when the two expressions name the same number regardless of which value is

	substituted into them). *For example, the expressions y + y + y and 3y are equivalent because they name the same number regardless of which number y stands for.* ***Reason about and solve one-variable equations and inequalities.*** 5. Understand solving an equation or inequality as a process of answering a question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true. 6. Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or, depending on the purpose at hand, any number in a specified set. 7. Solve real-world and mathematical problems by writing and solving equations of the form x + p = q and px = q for cases in which p, q, and x are all nonnegative rational numbers. 8. Write an inequality of the form x > c or x < c to represent a constraint or condition in a real-world or mathematical problem. Recognize that inequalities of the form x > c or x < c have infinitely many solutions; represent solutions of such inequalities on number line diagrams. ***Represent and analyze quantitative relationships between dependent and independent variables.*** 9. Use variables to represent two quantities in a real-world problem that change in relationship to one another; write an equation to express one quantity, thought of as the dependent variable, in terms of the other quantity, thought of as the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation. *For example, in a problem involving motion at constant speed, list and graph ordered pairs of distances and times, and write the equation d = 65t to represent the relationship between distance and time.*
Content Vocabulary • numerical pattern • corresponding terms • ordered pair • coordinate plane	**Academic Vocabulary** • generate • explain • compare • contrast

Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain ***Number and Operations in Base Ten***

Cluster ***Understand the place value system.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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.***

   Learning Targets:
   - I can recognize and explain the value of each digit in a multi-digit number as 10 times the digit to the right (e.g., 2 x 1 = 2, 2 x 10 = 20, 2 x 100 = 200).
   - I can recognize and explain the value of each digit in a multi-digit number as 1/10 the digit to the left (e.g., 2 x 1/10 = 0.2 = 2/10, 2 x 1/100 = 0.02 = 2/100, 2 x 1/1000 = 0.002).

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.***

   Learning Targets:
   - I can express powers of 10 using whole-number exponents (e.g., $10 = 10^1$, $100 = 10^2$, $1000 = 10^3$).
   - I can illustrate and explain a pattern for how the number of zeros of a product – when multiplying a whole number by power of 10 – relates to the power of 10 (e.g., 500, which is 5 x 100, or 5 x 10^2 – has two zeros in its product).
   - I can illustrate and explain a pattern for how multiplying or dividing any decimal by a power of 10 relates to the placement of the decimal point (e.g., multiplying 15.3 by 10 = 153, and dividing 15.3 by 10 = 1.53).

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Generalize place value understanding for multi-digit whole numbers.

1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
3. Use place value understanding to round multi-digit whole numbers to any place.

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

3. Read, write, and compare decimals to thousandths.

a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form; e.g., 347.392 = 3 x 100 + 4 x 10 + 7 x 1 + 3 x (1/10) + 9 x (1/100) + 2 x (1/1000).

b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.

Learning Targets:

- I can read and write decimals to the thousandths in word form, base ten numerals, and expanded form.
- I can compare two decimals to the thousandths using place value and record the comparison using the symbols <, =, >.

4. Use place value understanding to round decimals to any place.

Learning Targets:

- I can explain how to use place value and what digit to look at when rounding a decimal to a given place.

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

Progression to Sixth Grade

Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
   For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." For every vote candidate A received, candidate C received nearly three votes."
2. Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ ☐0, and use rate language in the context of a ratio relationship.
   For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."
3. Use ratio and rate reasoning to solve real-world and mathematical problems; e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
   a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
   b. Solve unit rate problems including those involving unit pricing and constant speed.
      For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
   c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
   d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Content Vocabulary • place and value • powers of 10 • exponent • decimal • decimal place • base-ten numeral (standard form) • number names (word form) • expanded form • round	**Academic Vocabulary** • recognize • explain • express • illustrate • compare
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain ***Number and Operations in Base Ten***

Cluster ***Perform operations with multi-digit whole numbers and with decimals to hundredths.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

5. Fluently multiply multi-digit whole numbers using the standard algorithm.

Learning Targets:
- I can explain the standard algorithm for multi-digit whole number multiplication.
- I can use the standard algorithm to multiply multi-digit whole numbers with ease.

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.

Learning Targets:
- I can solve division of a whole number with four-digit dividends and two-digit divisors using properties of operations and equations.
- I can choose a strategy (place value, rectangular arrays, area model, etc.) to demonstrate the relationship between multiplication and division of a whole number with four-digit dividends and two-digit divisors.

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.

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:
1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Generalize place value understanding for multi-digit whole numbers.
1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.
3. Use place value understanding to round multi-digit whole numbers to any place.

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

Learning Targets:

- I can add, subtract, multiply, and divide decimals to hundredths using strategies based on place value, properties of operations, or other strategies.
- I can explain and illustrate strategies using concrete models or drawings when adding, subtracting, multiplying, and dividing decimals to hundredths.

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

Progression to Sixth Grade

Understand ratio concepts and use ratio reasoning to solve problems.

1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.
   For example, "The ratio of wings to beaks in the bird house at the zoo was 2:1, because for every 2 wings there was 1 beak." "For every vote candidate A received, candidate C received nearly three votes."
2. Understand the concept of a unit rate a/b associated with a ratio a:b with b ≠ ☐0, and use rate language in the context of a ratio relationship.
   For example, "This recipe has a ratio of 3 cups of flour to 4 cups of sugar, so there is 3/4 cup of flour for each cup of sugar." "We paid $75 for 15 hamburgers, which is a rate of $5 per hamburger."
3. Use ratio and rate reasoning to solve real-world and mathematical problems; e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations.
   a. Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane. Use tables to compare ratios.
   b. Solve unit rate problems including those involving unit pricing and constant speed.
      For example, if it took 7 hours to mow 4 lawns, then at that rate, how many lawns could be mowed in 35 hours? At what rate were lawns being mowed?
   c. Find a percent of a quantity as a rate per 100 (e.g., 30% of a quantity means 30/100 times the quantity); solve problems involving finding the whole, given a part and the percent.
   d. Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities.

Content Vocabulary • standard algorithm • rectangular array • area model • decimal • whole number	**Academic Vocabulary** • explain • demonstrate • illustrate • concrete model
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain ***Number and Operations – Fractions***

Cluster ***Use equivalent fractions as a strategy to add and subtract fractions.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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.)

   Learning Targets:
   - I can determine common multiples of unlike denominators.
   - I can generate equivalent fractions using common multiples.
   - I can add and subtract fractions with unlike denominators (including mixed numbers) using equivalent fractions.

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.

   Learning Targets:
   - I can solve addition and subtraction word problems involving fractions using visual models or equations.
   - I can use estimation strategies, benchmark fractions, and number sense to check if my answer is reasonable.

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction (n x a)(n x 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.
2. Compare two fractions with different numerators and different denominators; e.g., by creating common denominators or numerators or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, <, and justify the conclusions; e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

	3. Understand a fraction a/b with a > 1 as a sum of fractions 1/b. a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions; e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.* c. Add and subtract mixed numbers with like denominators; e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction. d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators; e.g., by using visual fraction models and equations to represent the problem. 4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).* b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5), recognizing this product as 6/5. (In general, n x (a/b) = (n x a)/b.)* c. Solve word problems involving multiplication of a fraction by a whole number; e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?* ***Understand decimal notation for fractions, and compare decimal fractions.*** 5. Express a fraction with a denominator of 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*

	6. Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.* 7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions; e.g., by using a visual model. **<u>Progression to Sixth Grade</u>** ***Apply and extend previous understandings of numbers to the system of rational numbers.*** 1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions; e.g., by using visual fraction models and equations to represent the problem. *For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?* ***Compute fluently with multi-digit numbers and find common factors and multiples.*** 2. Fluently divide multi-digit numbers using the standard algorithm. 3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation. 4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1 – 100 with a common factor as a multiple of a sum of two whole numbers with no common factor. *For example, express 36 + 8 as 4 (9 + 2).*
Content Vocabulary • mixed numbers • equivalent fractions • numerator • denominator	**Academic Vocabulary** • determine • visual model • reasonable

• benchmark fractions • equation • number sense • estimate	
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain	***Number and Operations – Fractions***
Cluster	***Apply and extend previous understandings of multiplication and division to multiply and divide fractions.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

3. Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers; e.g., by using visual fraction models or equations to represent the problem.
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?

Learning Targets:

- I can explain that fractions (a/b) can be represented as a division of the numerator by the denominator (a ÷ b) and illustrate why a ÷ b can be represented by the fraction a/b.
- I can solve word problems involving the division of whole numbers and interpret the quotient – which could be a whole number, mixed number, or fraction – in the context of the problem.
- I can explain or illustrate my solution strategy using visual fraction models or equations that represent the problem.

4. Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

a. Interpret the product (a/b) x q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a x q ÷ b. *For example, use a visual fraction model to show (2/3) x 4 = 8/3, and create a story context for this equation. Do the same with (2/3) x (4/5) = 8/15. (In general, (a/b) x (c/d) = ac/bd.)*
b. Find the area of a rectangle with fractional side lengths by tiling it with

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

Key Advances from Fourth Grade

Extend understanding of fraction equivalence and ordering.

1. Explain why a fraction a/b is equivalent to a fraction (n x a)(n x 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.
2. Compare two fractions with different numerators and different denominators; e.g., by creating common denominators or numerators or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, <, and justify the conclusions; e.g., by using a visual fraction model.

Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

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.

Learning Targets:

- I can create story contexts for problems involving multiplication of a fraction and a whole number ((a/b) x q) or multiplication of two fractions ((a/b) x (c/d)) by interpreting multiplication with fractions in the same way that I would interpret multiplication with whole numbers (e.g., 2/3 x 4 can be interpreted as, "If I need 2/3 cups of sugar for 1 batch of cookies, how much sugar do I need to make 4 batches of cookies?").
- I can use visual models to show and explain multiplication of fractions, mixed numbers, and whole numbers.
- I can use unit fraction squares to prove the area of rectangles with fractional side lengths.
- I can determine the area of rectangles with fractional side lengths by multiplying the side lengths.

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 a/b = (n x a)/(n x b) to the effect of multiplying a/b by 1.

Learning Targets:

- I can interpret the relationship between the size of the factors to the size of the product.
- I can explain multiplication as scaling (to enlarge or reduce) using a visual model.
- I can multiply a given fraction by 1 (in fraction form, e.g. 4/4) to find an equivalent fraction.

3. Understand a fraction a/b with a > 1 as a sum of fractions 1/b.
   a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.
   b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions; e.g., by using a visual fraction model.
      Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.
   c. Add and subtract mixed numbers with like denominators; e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.
   d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators; e.g., by using visual fraction models and equations to represent the problem.
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
   a. Understand a fraction a/b as a multiple of 1/b.
      For example, use a visual fraction model to represent 5/4 as the product 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).
   b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number.
      For example, use a visual fraction model to express 3 x (2/5) as 6 x (1/5), recognizing this product as 6/5. (In general, n x (a/b) = (n x a)/b.)
   c. Solve word problems involving multiplication of a fraction by a whole number; e.g., by using visual fraction models and equations to represent the problem.
      For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?

Understand decimal notation for fractions, and compare decimal fractions.

5. Express a fraction with a denominator of 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100.
   For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.

- I can explain why multiplying a given number by a number or fraction greater than 1 will result in a product greater than the given number.
- I can explain why multiplying by a given number less than 1 will result in a product less than the given number.

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.

Learning Targets:

- I can solve real world problems involving multiplication of fractions and mixed numbers and interpret the product in the context of the problem.
- I can explain or illustrate my solution strategy using visual fraction models or equations that represent the problem.

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) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) x 4 = 1/3.

b. Interpret division of a whole number of a unit fraction, and compute such quotients.
For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 x (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:

6. Use decimal notation for fractions with denominators 10 or 100.
For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.
7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions; e.g., by using a visual model.

Progression to Sixth Grade

Apply and extend previous understandings of numbers to the system of rational numbers.

1. Interpret and compute quotients of fractions, and solve word problems involving division of fractions by fractions; e.g., by using visual fraction models and equations to represent the problem.
For example, create a story context for (2/3) ÷ (3/4) and use a visual fraction model to show the quotient; use the relationship between multiplication and division to explain that (2/3) ÷ (3/4) = 8/9 because 3/4 of 8/9 is 2/3. (In general, (a/b) ÷ (c/d) = ad/bc.) How much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 3/4-cup servings are in 2/3 of a cup of yogurt? How wide is a rectangular strip of land with length 3/4 mi and area 1/2 square mi?

Compute fluently with multi-digit numbers and find common factors and multiples.

2. Fluently divide multi-digit numbers using the standard algorithm.
3. Fluently add, subtract, multiply, and divide multi-digit decimals using the standard algorithm for each operation.
4. Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers 1 – 100 with a common factor as a multiple of a sum of two whole numbers with no common factor.
For example, express 36 + 8 as 4 (9 + 2).

• I can create story contexts for problems involving division of fractions. • I can solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, and interpret the quotient in the context of the problem. • I can explain or illustrate my solution strategy by using visual fraction models or equations that represent the problem.	
Content Vocabulary • mixed number • numerator • denominator • whole number • quotient • visual fraction model • partition • unit fraction • scaling • factor • product • story context	**Academic Vocabulary** • explain • illustrate • interpret • determine • represent
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain	***Measurement and Data***
Cluster	***Convert like measurement units within a given measurement system.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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

Learning Targets:

- I can convert (change) measurement units within the same measurement system (e.g., 24 inches to 2 feet or 100 centimeters to 1 meter).
- I can solve multi-step word problems using measurement conversions.

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit if terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.
   For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.

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<td><u>Progression to Sixth Grade</u>

Develop understanding of statistical variability.
1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one anticipates variability in students’ ages.
2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.
3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number.
Summarize and describe distributions.
4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots.
5. Summarize numerical data sets in relation to their context, such as by:
a. Reporting the number of observations.
b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement.
c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered.
d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.</td>
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<td>Content Vocabulary
• measurement system
• conversion
• unit</td>
<td>Academic Vocabulary
• convert
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• Stepping Stones performance tasks, interviews, pretests</td>
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Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain ***Measurement and Data***

Cluster ***Represent and interpret data.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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.

Learning Targets:

- I can create a line plot with a given set of unit fraction measurements.
- I can solve problems using data on line plots.

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

<u>Key Advances from Fourth Grade</u>

Represent and interpret data.

4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.
   For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

<u>Progression to Sixth Grade</u>

Develop understanding of statistical variability.

1. Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers. For example, “How old am I?” is not a statistical question, but “How old are the students in my school?” is a statistical question because one

	anticipates variability in students' ages. 2. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape. 3. Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. ***Summarize and describe distributions.*** 4. Display numerical data in plots on a number line, including dot plots, histograms, and box plots. 5. Summarize numerical data sets in relation to their context, such as by: a. Reporting the number of observations. b. Describing the nature of the attribute under investigation, including how it was measured and its units of measurement. c. Giving quantitative measures of center (median and/or mean) and variability (interquartile range and/or mean absolute deviation), as well as describing any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered. d. Relating the choice of measures of center and variability to the shape of the data distribution and the context in which the data were gathered.
Content Vocabulary • line plot • unit fraction	**Academic Vocabulary**
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain	***Measurement and Data***
Cluster	***Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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.

Learning Targets:

- I can identify volume as an attribute of a solid figure.
- I can recognize that a cube with 1 unit side length is "one cubic unit" of volume.
- I can explain a process for finding the volume of a solid figure by filling it with unit cubes without gaps and overlaps.

4. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.

Learning Targets:

- I can count unit cubes in order to find the volume of a three-dimensional figure.

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

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

Key Advances from Fourth Grade

Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

2. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.

Progression to Sixth Grade

Solve real-world and mathematical problems involving area, surface area, and volume.

2. Find the volume of a right rectangular prism with fractional edge lengths

property of multiplication.

b. Apply the formulas V = l x w x h and V = b x 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.

Learning Targets:

- I can explain multiplication of the area of the base (l x w = b) by the height (b x h = V) will result in the volume.
- I can relate finding the product of three numbers to finding volume and relate both to the associative property of multiplication.
- I can use the formulas to determine the volume of rectangular prisms.
- I can solve real world problems involving volume.
- I can decompose an irregular figure into non-overlapping rectangular prisms and find the volume of the irregular figure by finding the sum of the volumes of each of the decomposed prisms.

by packing it with unit cubes of the appropriate unit fraction edge lengths, and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas V = l w h and V = b h to find volumes of right rectangular prisms with fractional edge lengths in the context of solving real-world and mathematical problems.

Content Vocabulary

- volume
- unit cube
- cubic unit
- rectangular prism
- additive
- solid figure
- 3-dimensional figure
- area
- base
- height
- associative property of multiplication
- irregular figure
- decompose

Academic Vocabulary

- identify
- attribute
- recognize
- explain
- determine
- decompose

Formative Assessments

- Stepping Stones performance tasks, interviews, pretests

Summative Assessments

- Stepping Stones
- PARCC

Resources	Enrichment Strategies
• Stepping Stones	
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain *Geometry*

Cluster ***Graph points on the coordinate plane to solve real-world and mathematical problems.***

Pacing

1st Quarter: Stepping Stones Modules 1, 2, 3
2nd Quarter: Stepping Stones Modules 4, 5, 6
3rd Quarter: Stepping Stones Modules 7, 8, 9
4th Quarter: Stepping Stones Modules 10, 11, 12

Standards

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).***

   Learning Targets:
   - I can identify the origin, x-axis, and y-axis of a coordinate plane.
   - I can identify and locate an ordered pair such as (3,2) on a coordinate plane.

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:
   - I can determine when a mathematical problem has a set of ordered pairs.
   - I can graph points in the first quadrant of a coordinate plane using a set of ordered pairs.
   - I can write the ordered pair for a given point on a coordinate plane.

Content Elaborations

Standards of Mathematical Practice

Mathematically proficient students:

1. Make sense of problems and persevere in solving them.
2. Reason abstractly and quantitatively.
3. Construct viable arguments and critique the reasoning of others.
4. Model with mathematics
5. Use appropriate tools strategically.
6. Attend to precision.
7. Look for and make use of structure.
8. Look for and express regularity in repeated reasoning.

From the K-8 Math Standards Progression.

Key Advances from Fourth Grade

Represent and interpret data.

4. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots.
   For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.

Progression to Sixth Grade

Solve real-world and mathematical problems involving area, surface area, and volume.

3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in

	the context of solving real-world and mathematical problems.
Content Vocabulary • perpendicular • axis/axes • intersect • coordinate system • origin • x-axis • y-axis • x-coordinate • y-coordinate • ordered pair • horizontal • vertical • quadrant • coordinate plane	**Academic Vocabulary** • construct • recognize • identify • explain • determine • relate
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**

Grade Five Mathematics

Domain ***Geometry***	
Cluster ***Classify two-dimensional figures into categories based on their properties.***	**Pacing** **1st Quarter:** Stepping Stones Modules 1, 2, 3 **2nd Quarter:** Stepping Stones Modules 4, 5, 6 **3rd Quarter:** Stepping Stones Modules 7, 8, 9 **4th Quarter:** Stepping Stones Modules 10, 11, 12
Standards ***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.* **Learning Targets:** • I can classify two-dimensional figures by their attributes. • I can identify and explain the subcategories of 2-dimensional attributes (e.g., a square is also a rhombus because they both have four equal sides). ***4. Classify two-dimensional figures in a hierarchy based on properties.*** **Learning Targets:** • I can group together all shapes that share a single property, and then among these shapes group together those that share a second property, and then among these group together those that share a third property, etc. (e.g., polygons, quadrilaterals, rectangles, squares).	**Content Elaborations** **Standards of Mathematical Practice** ***Mathematically proficient students:*** 1. Make sense of problems and persevere in solving them. 2. Reason abstractly and quantitatively. 3. Construct viable arguments and critique the reasoning of others. 4. Model with mathematics 5. Use appropriate tools strategically. 6. Attend to precision. 7. Look for and make use of structure. 8. Look for and express regularity in repeated reasoning. **From the K-8 Math Standards Progression.** **<u>Key Advances from Fourth Grade</u>** ***Draw and identify lines and angles, and classify shapes by properties of their lines and angles.*** 1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures. 2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles. 3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.

	Progression to Sixth Grade ***Solve real-world and mathematical problems involving area, surface area, and volume.*** 3. Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate. Apply these techniques in the context of solving real-world and mathematical problems. 4. Represent three-dimensional figures using nets made up of rectangles and triangles, and use the nets to find the surface area of these figures. Apply these techniques in the context of solving real-world and mathematical problems.
Content Vocabulary • 2-dimensional figure • property • attributes	**Academic Vocabulary** • attributes • classify • explain • identify • category/subcategory • hierarchy
Formative Assessments • Stepping Stones performance tasks, interviews, pretests	**Summative Assessments** • Stepping Stones • PARCC
Resources • Stepping Stones	**Enrichment Strategies**
Integrations	**Intervention Strategies**