# 5th Grade Mathematics

Mathematics

Grade(s) 5th, Duration 1 Year
Required Course

## Course Description

In 5th Grade Mathematics, instructional time will focus on four critical areas: (1) develop fluency with addition and subtraction of fractions as well as develop understanding of the multiplication and division of fractions; (2) recognize decimals in the place value system as well as develop an understanding of operations with decimals to the hundredths place, and develop fluency with whole number and decimal operations; a extend division calculations to 4-digit dividends and 2-digit divisors; (3) develop an understanding of volume; (4) understand the various aspects of patterns and relationships, percentages, geometry, triangles, rations, angles, averages, rate, and graphs.

## Scope And Sequence

| Timeframe | Unit | Instructional Topics |
|---|---|---|
| 6 Week(s) | Whole Numbers | 1. Place Value<br>2. Approximation and Estimation<br>3. Multiply and Divide by 10, 100, 1000<br>4. Order of Operations<br>5. Word Problems<br>6. Multiply by a 2-digit Number<br>7. Divide by 2-Digit Number |
| 2 Week(s) | Analyze Patterns and Relationships | 1. Write simple expressions that record calculations with numbers.<br>2. Generating Patterns |
| 7 Week(s) | Fractions and Mixed Numbers | 1. Fraction and Division<br>2. Addition and Subtraction of Unlike Fractions<br>3. Addition and Subtraction of Mixed Numbers<br>4. Product of a Fraction and a Whole Number and Product of a Fraction and a Fraction<br>5. Dividing a Fraction by a Whole Number<br>6. Word Problems |
| 4 Week(s) | Decimals | 1. Approximation and Estimation<br>2. Multiply & Divide<br>3. Conversion of Measurements |
| 3 Week(s) | Percentage | 1. Percent<br>2. Decimals to Percentages<br>3. Fractions as Percents<br>4. Solve Word Problems Using Percentages<br>5. Find Percent of a Whole |
| 3 Week(s) | Geometry | 1. Understand attributes of 2-D figures and classify them in a hierarchy<br>2. Locate and interpret points on a coordinate plane. |
| 2 Week(s) | Volume | 1. Volume |
| 5 Week(s) | Measurement-area of triangles, ratios, measuring angles | 1. Area of a Triangle<br>2. Ratio<br>3. Angles |
| 4 Week(s) | Data-Average & Rate | 1. Average and Rate |
| 174 Day(s) | Lisa Carter 2015 | 1. 5.OA.1 - use parentheses, brackets, or braces in numerical expressions and evaluate expressions with them.<br>2. 5.OA.2 - write and interpret numerical expressions without evaluating them.<br>3. 5.OA.3 - generate numerical patterns, identify relationships between terms, and form ordered pairs from those terms by graphing them on the coordinate plane.<br>4. 5.NBT.1 - recognize in multi-digit numbers that a digit in one place represents 10 times as much as the digit to its right and 1/10 of what it represents in the place to its left.<br>5. 5.NBT.2 - explain patterns in the number of zeros when multiplying by powers of 10, multiplying or dividing decimals by a power of 10 or using whole number exponents to denote powers of 10.<br>6. 5.NBT.3a - read, write, and compare decimals to thousandths by using base-ten numerals, number names, and expanded form.<br>7. 5.NBT.3b - read, write, and compare decimals to thousandths based on meanings of the digits in each place by using symbols such as >, <, and = to compare results.<br>8. 5.NBT.4 - use understanding of place value to round decimals to any place. |

9. 5.NBT.5 - multiply multi-digit whole numbers by using the standard algorithm.
10. 5.NBT.6 - find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors. Use multiple strategies to solve.
11. 5.NBT.7 - add, subtract, multiply, and divide decimals to hundredths and relate the strategy to a written method.
12. 5.NF.1 - add/subtract fractions and mixed numbers with unlike denominators by replacing fractions with equivalent fractions.
13. 5.NF.2 - solve word problems with addition/subtraction of fractions and estimate mentally, as well as assess reasonableness of answers.
14. 5.NF.3 - interpret a fraction as division of the numerator by the denominator and solve word problems including division of whole numbers with quotients that are fractions or mixed numbers.
15. 5.NF.4a - apply and extend understandings of multiplication to multiply with fractions and interpret the product as a part of a partition.
16. 5.NF.4b - find the area of a rectangle with fractional side lengths and show the area is the same by multiplying the side lengths.
17. 5.NF.5a - compare the size of a product to the size of a factor by using the size of the other factor with performing the indicated multiplication.
18. 5.NF.5b - interpret multiplication as scaling by explaining why multiplying a given number by a fraction >1 results in a product greater than the given number.
19. 5.NF.6 - solve real world problems involving multiplication of fractions and mixed numbers by using various models/equations to represent the problem.
20. 5.NF.7a - apply and extend division knowledge to interpret division of a unit fraction by a non-zero whole number.
21. 5.NF.7b - apply previous understandings of division to interpret division of a whole number by a unit fraction and to compute such quotients.
22. 5.NF.7c - apply previous understandings of division to solve real world problems involving division of unit fractions by non-zero whole numbers and unit fractions.
23. 5.G.1. Graphing points
24. 5.MD.1 - convert among different-sized standard measurement units within a given measurement system.
25. 5.G2 Graphing
26. 5.MD.2 - create a line plot to display a data set of measurements in fractions of a unit.
27. 5.MD.3a - recognize volume as an attribute of solid figures and understand that cubes have "one cubic unit" of volume when measuring.
28. 5.G 3.ClassifyTwo-dimensional Figures
29. 5.MD.3b - recognize volume as an attribute of solid figures and understand it can be packed without gaps or overlaps using n unit cubes.
30. 5.G.4 Classify two-dimensional figures
31. 5.MD.4 - measure volumes by counting unit cubes, using cubic units, and improvised units.
32. 5.MD.5a - relate volume to multiplication and addition operations and find volume of right rectangular prisms by packing it with unit cubes. Demonstrate process is the same as multiplying.
33. 5.MD.5b - relate volume to operations of multiplication and division and apply formulas to find volume of rectangular prisms.
34. 5.MD.5c - relate volume to the operations of multiplication and division and recognize volume as additive.

174 Day(s)          Lisa Carter

**Course Rationale/Goals**

In alignment with Common Core State Standards and the ever-changing 21st Century, it is imperative for students to have a proficient understanding of mathematics to succeed in everyday life. K-5 grades will continue to build a strong foundation for future mathematical learning. This will enable the student to grow as a lifelong mathematical problem-solver.

## Course Details

**Unit:** Whole Numbers

**Duration:** 6 Week(s)

**Unit Description/Transfer Goal**

Whole numbers will focus on the value recognition of multi-digit numbers through the millions place, estimating and approximating numbers,

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order of operations, problem solving, and the calculation of multi-digit multiplication and division problems.

Goal: Students will be able to independently use their learning to recognize and calculate large numbers using a variety of mathematical operations.

**Enduring Understandings**

Students will understand 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.

Students will understand and fluently use the processes of multiplication and long division.

**Essential Skills**

How do mathematical operations relate to each other?

How do I know which mathematical operation to use?

What is the importance of division?

**Essential Vocabulary**

multiply
divide
dividend
divisor
quotient
remainder

| **Topic:** Place Value | **Duration:** 3 Day(s) |
|---|---|

**Student Learning Plan**

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**

Identify place value to the millions.
> Practice standards for this target include attending to precision and constructing viable arguments and critique the reasoning of others.
> Assessment: The proficient student will be able to correctly read and write numbers through the millions place and understand the values of the digits within a number to defend its value.
> Common Formative Assessment

Write and recognize whole numbers in standard, expanded and word form.
> THe practice standards for this learning target include attending to precision and constructing viable arguments and critique the reasoning of others.
> Assessment: The proficient student will be able to identify whole numbers through the millions place in various forms such as standard, expanded, and word form and explain the process of changing numebers from one form to another.
> Common Formative Assessment

| **Topic:** Approximation and Estimation | **Duration:** 3 Day(s) |
|---|---|

**Learning Targets**

Estimate the value of a given problem by rounding whole numbers to a given place value.
> The practice standard for this learning target is reason abstractly and quantitatively.
> Assessment: The proficient student will be able to use their rounding skills to estimate the solution to a given problem.
> Common Formative Assessment

| **Topic:** Multiply and Divide by 10, 100, 1000 | **Duration:** 3 Day(s) |
|---|---|

**Learning Targets**

Multiply multi-digit numbers by tens, hundreds, or thousands.
> The practice standard for this target includes looking for and making use of structures
> Assessment: Proficient students will be able to notice that when you multiply by tens, hundreds, or thousands there is a correlation with the number of zeros in their answer.
> Common Formative Assessment

Divide multi-digit numbers by tens, hundreds, or thousands.
> The practice standard for this learning target is looking for and making use of structures.
> Assessment: Proficient students will see the correlation of dividing by tens, hundreds, or thousands and seeing the correlation of zeros in the answer.
> Common Formative Assessment

| **Topic:** Order of Operations | **Duration:** 3 Day(s) |
|---|---|

**Learning Targets**

Evaluate numerical expressions with parenthesis based on the order of operations rules.

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Practice Standards for this target include making sense of problems and persevere in solving them and constructing viable arguments and critique the reasoning of others.

Assessment:  The proficient student will be able to evalaute numerical expressions with parenthesis based on the order of operations rules and explain how a solution was obtained.
Common Formative Assessment

| **Topic:** Word Problems | **Duration:** 3 Day(s) |
|---|---|

**Learning Targets**

Solve real world word problems involving multiple operations.
Practice standard for this learning target is making sense of problems and persevere in solving them.

Assessment:  Proficient students will solve real world math problems and use their knowledge of whole numbers to work through the problem and reflect on their solution for reasonableness.
Common Formative Assessment

| **Topic:** Multiply by a 2-digit Number | **Duration:** 5 Day(s) |
|---|---|

**Learning Targets**

Students will be able to fluently multiply multi-digit whole numbers using the standard algorithm.

| **Topic:** Divide by 2-Digit Number | **Duration:** 5 Day(s) |
|---|---|

**Learning Targets**

Students will be able to fluently divide whole numbers up to 4-digit dividends and 2-digit divisors.

## Unit:  Analyze Patterns and Relationships

**Duration:** 2 Week(s)

**Unit Description/Transfer Goal**

Operations and algebraic thinking will focus on multiplication and division of multi-digit whole numbers, writing, interpreting, and evaluating of numerical expressions, and generating numerical patterns using two given rules.

Goal: Students will be able to independently use their learning to calculate expressions using order of operations.

**Enduring Understandings**

Students will understand to fluently multiply multi-digit whole numbers using the standard algorithm.

Students will understand how to find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.

Students will understand to use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.

**Essential Skills**

How is thinking algebraically different from thinking arithmetically?

How do I use algebraic expressions to analyze or solve problems?

**Essential Vocabulary**

Variable
Expression
Parenthesis
Brackets
Braces
Evaluate
Order of Operations
Please My Dear Aunt Sally

| **Topic:** Write simple expressions that record calculations with numbers. | **Duration:** 3 Day(s) |
|---|---|

**Learning Targets**

Students will be able to write simple expressions that record calculations with numbers.

| **Topic:** Generating Patterns | **Duration:** 5 Day(s) |
|---|---|

**Learning Targets**

Students will be able to generate two patterns using two given rules.

## Unit:  Fractions and Mixed Numbers

**Duration:** 7 Week(s)

**Unit Description/Transfer Goal**

Fractions will focus on the continuation of number sense and fluency with addition and subtraction of fractions as well as develop understanding of the multiplication and division of fractions.

Goal: Students will be able to independently use their learning to manipulate fractions using multiple operations in future coursework.

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### Enduring Understandings
Students will understand how to use fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators

Students will understand how to apply and extend previous understandings of multiplication and division to multiply and divide fractions.

### Essential Skills
How does finding the common characteristics among similar problems help me to be a more efficient problem solver?

Why do we calculate fractions?

### Essential Vocabulary
numerator
denominator
like
unlike
equivalent
improper fraction
mixed number
add
subtract
multiply
divide

| **Topic:** Fraction and Division | **Duration:** 1 Day(s) |
|---|---|

### Learning Targets
Student will understand that a fraction represents the division of a numerator by a denominator.

| **Topic:** Addition and Subtraction of Unlike Fractions | **Duration:** 3 Day(s) |
|---|---|

### Learning Targets
Add and subtract fractions with unlike denominators.
    Practice standards for this learning target include attending to precision.
    Assessment: Proficient students will be able to explain how they add and subtract fractions with unlike. denominators
        Common Formative Assessment

| **Topic:** Addition and Subtraction of Mixed Numbers | **Duration:** 3 Day(s) |
|---|---|

### Student Learning Plan
Add and subtract mixed numbers

### Learning Targets
Add and subtract mixed numbers.
    Practice standards for this learning target is attending to precision
    Assessment: Proficient students will be able to add and subtract mixed numbers.
        Common Formative Assessment

| **Topic:** Product of a Fraction and a Whole Number and Product of a Fraction and a Fraction | **Duration:** 1 Week(s) |
|---|---|

### Learning Targets
Multiply a fraction or whole number by a fraction.
    Prcactice standards for this learning target is to attend to precision.
    Assessment: Proficient students will be able to multiply a fraction by a whole number when given a problem.
        Common Formative Assessment

| **Topic:** Dividing a Fraction by a Whole Number | **Duration:** 3 Day(s) |
|---|---|

### Student Learning Plan
Divide a fraction by a whole number.

### Learning Targets
Divide a fraction by a whole number and a whole number by a fraction.
    Practice standard for the learning target is atend to precison and look for and make use of structures.
    Assessment: Proficient students will use the steps taught to divide a fraction by a whole number when given a specific problem.

| **Topic:** Word Problems | **Duration:** 1 Week(s) |
|---|---|

### Learning Targets
Solve real word problems involving all four operations of fractions.
    Practice standard for this learning target includes making sense of problems and presevere in solving them.

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Assessment: Proficient students will be able to read and interpret word problems and determine what operations will be used to answer the questions.
Common Formative Assessment

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## Unit: Decimals

**Duration:** 4 Week(s)

**Unit Description/Transfer Goal**

Decimals will focus on the understanding of place value and calculating operations to the thousandths place.

Goal: Students will be able to independently use their learning to calculate and count various monetary values of change.

**Enduring Understandings**

Students will understand the importance of accurately identifying and comparing decimals.

Students will understand how to fluently calculate decimals to the hundredths place.

**Essential Skills**

How are decimals important in our everyday lives?

Why do we calculate decimals?

How does comparing decimal quantities describe the relationship between them?

**Essential Vocabulary**

decimal point
decimal place
tenth
hundredth
thousandth
standard form
expanded form
word form
greater than
less than
equal to
equivalent
add
placeholder
regroup / borrow
sum
subtract
difference
multiply
product
divide
divisor
dividend
quotient
annex / add

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### Topic: Approximation and Estimation

**Duration:** 3 Day(s)

**Learning Targets**

Round decimals to a given place.
Practice standards for this unit is to attend to precision.
Assessment: Proficient students will be able to round a decimal to a specified place and apply that found value to a real world situations.
Common Formative Assessment

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### Topic: Multiply & Divide

**Duration:** 11 Day(s)

**Learning Targets**

Multiply decimals by tens, hundreds, or thousands.
Practice standards for this learning target include looking for and making sense of structures and using concrete models.
Assessment: Proficient students will be able to discern a pattern when they multiply decimals by tens, hundreds, or thousands.
Common Formative Assessment

Divide decimals by tens, hundreds, or thousands.
Practice standards for this learning target include looking for a making use of structures.
Assessment: Proficient students will be able to apply their knowledge of patterns when dividing decimals by tens, hundreds, or thousands.
Common Formative Assessment

Multiply a decimal by a 2-digit number.
Practice standards for this learning target is attending to precision.

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Assessment:  Proficient students will be able multiply a decimal by a 2-digit number.
Common Formative Assessment

## Topic:  Conversion of Measurements    Duration: 4 Day(s)

**Learning Targets**
Convert like measurement units within a given measurement system.
Practice standard for this learning target is look for and express regularity in repeated reasoning.
Assessment:  Proficient students will be able to convert both metric, customary, and or standard units of measurement.
Common Formative Assessment

# Unit:  Percentage    Duration: 3 Week(s)

**Unit Description/Transfer Goal**
Percentage will focus on finding a percent of a quantity as a rate per 100.

Goal: Students will be able to independently calculate percentage savings on purchases made.

**Enduring Understandings**
Students will understand that a percent represents a part of a whole and can be represented through a decimal or fraction.

## Topic:  Percent    Duration: 1 Day(s)

**Student Learning Plan**
The student will write a percent out of 100 and from a fraction with a denominator or 10 or 100.

**Learning Targets**
Identify the percent of a quantity.
Practice standard for this learning target is model with mathematics.
Assessment:  Proficient students will be able to identify the percent of a quantity through calcualtion.
.Common Formative Assessment

## Topic:  Decimals to Percentages    Duration: 1 Day(s)

**Student Learning Plan**
The student will express decimals as percents.

**Learning Targets**
The student will express decimals as percents.

## Topic:  Fractions as Percents    Duration: 4 Day(s)

**Learning Targets**
Write fractions as percents.
Practice standard for this learning target is to model with mathematics
Assessment:  Proficient students will be able to explain how a fraction can be turned into a percent with information presented in everyday
world situations.
Common Formative Assessment

## Topic:  Solve Word Problems Using Percentages    Duration: 5 Day(s)

**Student Learning Plan**
Students will find a percentage of a number in a word problem.

## Topic:  Find Percent of a Whole    Duration: 2 Day(s)

**Student Learning Plan**
Student will calculate the percent of a whole.

# Unit:  Geometry    Duration: 3 Week(s)

**Unit Description/Transfer Goal**
Geometric measurement will focus on classifying triangles and quadrilaterals, tiling patterns, and calculating the volume of a solid figure.

Goal: Students will be able to independently relate volume to multiplication and addition.

**Enduring Understandings**
Students will understand that geometry and spatial sense offer ways to interpret and reflect on our physical environment.

## Topic:  Understand attributes of 2-D figures and classify them in a    Duration: 1 Week(s)
hierarchy

**Learning Targets**
Identify and draw various quadrilaterals

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Practice standard for this learning target is attend to precision and use appropriate tools strategically.

Assessment: Proficient students will have to apply the rules of quadrilaterals to be able to identify and draw them independently.

Common Formative Assessment

| **Topic:** Locate and interpret points on a coordinate plane. | **Duration:** 3 Day(s) |
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**Learning Targets**

Students will be able to use axes to represent real world and mathematical problems by graphing points in the first quadrant of a coordinate plane.

## Unit: Volume
**Duration:** 2 Week(s)

| **Topic:** Volume | **Duration:** 1 Week(s) |
| --- | --- |

**Student Learning Plan**

Recognize volume and apply the formulas.

**Learning Targets**

Recognize cubes and cuboids and find their volume.

Find the volume of a solid.

Practice standard for this learning target is construct viable arguments and critique the reasoning of others.

Assessment: Proficient students will be able to find the volume of a given solid based on the information that is provided and explain how it was done.

Common Formative Assessment

Students will be able to understand concepts of volume and relate volume to multiplication and addition.

## Unit: Measurement-area of triangles, ratios, measuring angles
**Duration:** 5 Week(s)

**Unit Description/Transfer Goal**

Measurement will focus on finding the area of a triangle, recognizing and comparing ratios as well as measuring angles

Goal: Students will be able to independently use their learning to calculate the area of a triangle, find and compare ratios, and measure angles.

**Enduring Understandings**

Students will understand the formula necessary to find the area of a triangle.

Students will understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities.

Students will understand how to measure an angle using a protractor.

**Essential Skills**

How does what I measure influence how we measure?

**Essential Vocabulary**

length
inch
foot
yard
mile
millimeter
centimeter
meter
kilometer
capacity
cup
pint
gallon
quart
fluid ounce
milliliter
liter
weight
mass
ounce
pound
ton
milligram
gram
kilogram
volume

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length
width
height
base area
multiply
unit cube
cubic cm
cubic in
cubic ft
rectangular prism
solid figure

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**Topic:** Area of a Triangle                                                     **Duration:** 2 Week(s)

**Learning Targets**

Find the area of a triangle.
  Practice standards for this learning target is model with mathematics
  Assessment:  Proficient students will be able to use the formula to find the area of various types of triangles.
    Common Formative Assessment

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**Topic:** Ratio                                                                  **Duration:** 2 Week(s)

**Learning Targets**

Understand the concept of a ratio.
  Practice standards for this learning target is to reason abstractly and quantitatively.
  Assessment:  Proficent stduents will be able to make sense of quantites expressed as a ration and describe the relationship between the quantites.
    Common Formative Assessment

Recognize equivalent ratios.
  Practice standard for this learning target is construct viable arguments and critique the reasoning of others.
  Assessment:  Proficient students will be able to explain the process one follows to find equivalent ratios.
    Common Formative Assessment

Compare three quantities.
  Practice standard for this learning target is look for and make use of structure.
  Assessment:  Proficent students will be able to compare three quanties of a ratio by using factor knowledge and division skills to simplify a ratio into lowest terms.
    Common Formative Assessment

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**Topic:** Angles                                                                 **Duration:** 1 Week(s)

**Learning Targets**

Measure angles with a protractor.
  Practice standard for this learning target is use appropriate tools.
  Assessment:  Proficent students will be able to measure given angles with a protractor within 2 degrees of the actual measurement.
    Common Formative Assessment

Calculate unknown angles.
  Practice standard for this learning target is look for and make use of structure.
  Assessment:  Proficient students will be able to find the degrees of an unknown angles by using prior knowledge of angles and the total amount of degress in a line.
    Common Formative Assessment

Find the sum of angles within a triangle.
  Practice standard for this learning target is look for and make use of structures.
  Assessment:  Proficient students will be able to use addition and subtraction skills to find the sum of angles within a triangle.
    Common Formative Assessment

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## Unit: Data-Average & Rate                                                      **Duration:** 4 Week(s)

**Unit Description/Transfer Goal**
  Data will focus on the concepts of a unit rate and average.

  Goal: Students will be able to independently use their learning to find their average monthly spending on household bills.

**Enduring Understandings**
  Students will understand how to calculate the average from a given set of data.

  Students will understand how to solve unit rate problems.

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**Topic:** Average and Rate                                                       **Duration:** 11 Day(s)

**Learning Targets**

Calculate the average for a given set of data.
> Practice standards for this learning target is to make sense of problems and persevere in solving them.
> Assessment: Proficient students will be able to calculate the average of a given set of data with accuracy.
> > Common Formative Assessment

Calculate rate for a given problem.
> Practice standard for this learning target is to make sense of problems and persevere in solving them.
> Assessment: Proficient students will be able to solve real world word problems that involve rate.
> > Common Formative Assessment

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**Unit:** Lisa Carter 2015                                                           **Duration:** 174 Day(s)

**Topic:** 5.OA.1 - use parentheses, brackets, or braces in numerical expressions and evaluate expressions with them.   **Duration:** 30 Day(s)

### Student Learning Plan
Operations and Algebraic Thinking: write and interpret numerical expressions.

### Learning Targets
-Grade 4 can interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. (DOK 3)
-Identify parentheses, brackets, and braces in equations. (DOK 1)
-Recognize the order of operations when solving an expression with symbols (parentheses, brackets, braces). (DOK 1)
-Calculate expressions with parentheses, then with parentheses and brackets, and finally with parentheses, brackets, and braces. (DOK 1)
-Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. (DOK 3)

**Topic:** 5.OA.2 - write and interpret numerical expressions without evaluating them.   **Duration:** Ongoing

### Student Learning Plan
Operations and Algebraic Thinking: write and interpret numerical expressions.

### Learning Targets
-Grade 4 can 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. (DOK 3)
-Relate appropriate vocabulary to numerical expressions (expression, sum, product, difference, quotient). (DOK 2)
-Interpret expressions with order of operations. (DOK 2)
-Relate number sense concepts to numerical expressions. (DOK 2)
-Relate concepts of estimation to numerical expressions. (DOK 2)
-Differentiate between reasonable and unreasonable estimates when interpreting numerical expressions. (DOK 3)
-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 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product. (DOK 3)

**Topic:** 5.OA.3 - generate numerical patterns, identify relationships between terms, and form ordered pairs from those terms by graphing them on the coordinate plane.   **Duration:** 30 Day(s)

### Student Learning Plan
Operations and Algebraic Thinking: analyze patterns and relationships.

### Learning Targets
-Grade 4 can generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way. (DOK 2)
-Construct two numerical patterns when given a rule. (DOK 2)
-Identify relationship between corresponding terms. (DOK 1)
-Recognize relevant vocabulary (ordered pair, corresponding terms, coordinate, x-axis, y-axis, coordinate plane). (DOK 1)
-Recognize ordered pairs from corresponding terms. (DOK 1)
-Graph ordered pairs on the coordinate plane. (DOK 1)
-Draw conclusions to explain why and how the rule affects the corresponding terms. (DOK 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. (DOK 2)

**Topic:** 5.NBT.1 - recognize in multi-digit numbers that a digit in one place represents 10 times as much as the digit to its right and 1/10 of what it represents in the place to its left.   **Duration:** 30 Day(s)

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**Student Learning Plan**
 Number and Operations in Base Ten: understand the place value system.

**Learning Targets**
 -Grade 4 can 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. (DOK 2)
 -State the differences between the place and the value of the digit in that place. (DOK 1)
 -Relate concepts of multiplication, division, and place value to understand that in multi-digit numbers, a digit in the ones place represents 1/10 of what it represents in each place to the left. (DOK 2)
 -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. (DOK 1)

| **Topic:** 5.NBT.2 - explain patterns in the number of zeros when multiplying by powers of 10, multiplying or dividing decimals by a power of 10 or using whole number exponents to denote powers of 10. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Number and Operations in Base Ten: understand the place value system.

**Learning Targets**
 -Identify place and value of digits to thousandths.
 -Read and write digits with decimals to thousandths.
 -Use expanded form and written form for digits with decimals.
 -Solve multiplication problems of whole numbers by powers of 10.
 -Solve division problems of whole numbers by powers of 10.
 -Recognize exponents and their meaning.
 -Use whole-number exponents to denote powers of 10 in given expressions.
 -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. (DOK 2)

| **Topic:** 5.NBT.3a - read, write, and compare decimals to thousandths by using base-ten numerals, number names, and expanded form. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Numbers and Operations in Base Ten: understand the place value system.

| **Topic:** 5.NBT.3b - read, write, and compare decimals to thousandths based on meanings of the digits in each place by using symbols such as >, <, and = to compare results. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Number and Operations in Base Ten: understand the place value system.

| **Topic:** 5.NBT.4 - use understanding of place value to round decimals to any place. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Number and Operations in Base Ten: understand the place value system.

| **Topic:** 5.NBT.5 - multiply multi-digit whole numbers by using the standard algorithm. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Number and Operations in Base Ten: perform operations with multi-digit whole numbers and with decimals to hundredths.

| **Topic:** 5.NBT.6 - find whole-number quotients of whole numbers with up to four-digit dividends and two-digit divisors.  Use multiple strategies to solve. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Number and Operations in Base Ten: perform operations with multi-digit whole numbers and with decimals to hundredths.

| **Topic:** 5.NBT.7 - add, subtract, multiply, and divide decimals to hundredths and relate the strategy to a written method. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
 Number and Operations in Base Ten: perform operations with multi-digit whole numbers and with decimals to hundredths.

| **Topic:** 5.NF.1 - add/subtract fractions and mixed numbers with unlike denominators by replacing fractions with equivalent fractions. | **Duration:** Ongoing |
|---|---|

# 5th Grade Mathematics

Mathematics

Grade(s) 5th, Duration 1 Year
Required Course

**Student Learning Plan**
Number and Operations - Fractions: use equivalent fractions as a strategy to add and subtract fractions.

**Topic:** 5.NF.2 - solve word problems with addition/subtraction of fractions and estimate mentally, as well as assess reasonableness of answers.                                                          **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: use equivalent fractions as a strategy to add and subtract fractions.

**Topic:** 5.NF.3 - interpret a fraction as division of the numerator by the denominator and solve word problems including division of whole numbers with quotients that are fractions or mixed numbers.                                                                                                **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.4a - apply and extend understandings of multiplication to multiply with fractions and interpret the product as a part of a partition.                                                         **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.4b - find the area of a rectangle with fractional side lengths and show the area is the same by multiplying the side lengths.                                                                    **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.5a - compare the size of a product to the size of a factor by using the size of the other factor with performing the indicated multiplication.                                                  **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.5b - interpret multiplication as scaling by explaining why multiplying a given number by a fraction >1 results in a product greater than the given number.                                        **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.6 - solve real world problems involving multiplication of fractions and mixed numbers by using various models/equations to represent the problem.                                               **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.7a - apply and extend division knowledge to interpret division of a unit fraction by a non-zero whole number.                                                                                **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.7b - apply previous understandings of division to interpret division of a whole number by a unit fraction and to compute such quotients.                                                       **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.NF.7c - apply previous understandings of division to solve real world problems involving division of unit fractions by non-zero whole numbers and unit fractions.                                  **Duration:** Ongoing

**Student Learning Plan**
Number and Operations - Fractions: apply and extend previous understandings of multiplication and division to multiply and divide fractions.

**Topic:** 5.G.1. Graphing points                                                                    **Duration:** 10 Day(s)

# 5th Grade Mathematics

Mathematics

Grade(s) 5th, Duration 1 Year
Required Course

**Student Learning Plan**
Geometry: Graph points on the coordinate plane to solve real-world and mathematical problems.

| **Topic:** 5.MD.1 - convert among different-sized standard measurement units within a given measurement system. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: convert like measurement units within a given measurement system.

| **Topic:** 5.G2 Graphing | **Duration:** 10 Day(s) |
|---|---|

**Student Learning Plan**
Geometry: Graph points on the coordinate plane to solve real-world and mathematical problems.

| **Topic:** 5.MD.2 - create a line plot to display a data set of measurements in fractions of a unit. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: represent and interpret data.

| **Topic:** 5.MD.3a - recognize volume as an attribute of solid figures and understand that cubes have "one cubic unit" of volume when measuring. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

| **Topic:** 5.G 3.ClassifyTwo-dimensional Figures | **Duration:** 10 Day(s) |
|---|---|

**Student Learning Plan**
Geometry: Classify two-dimensional figures into categories based on their properties.

| **Topic:** 5.MD.3b - recognize volume as an attribute of solid figures and understand it can be packed without gaps or overlaps using n unit cubes. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: geometric measurement: understand concepts of volume and relate volume to multiplication and addition.

| **Topic:** 5.G.4 Classify two-dimensional figures | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Geometry: Classify two-dimensional figures into categories based on their properties.

| **Topic:** 5.MD.4 - measure volumes by counting unit cubes, using cubic units, and improvised units. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

| **Topic:** 5.MD.5a - relate volume to multiplication and addition operations and find volume of right rectangular prisms by packing it with unit cubes.  Demonstrate process is the same as multiplying. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

| **Topic:** 5.MD.5b - relate volume to operations of multiplication and division and apply formulas to find volume of rectangular prisms. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

| **Topic:** 5.MD.5c - relate volume to the operations of multiplication and division and recognize volume as additive. | **Duration:** Ongoing |
|---|---|

**Student Learning Plan**
Measurement and Data: geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.

| **Unit:** Lisa Carter | **Duration:** 174 Day(s) |
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