4th Grade Mathematics

Mathematics

Grade(s) 4th, Duration 1 Year
Required Course

Course Description

Students will focus on three critical areas in fourth grade mathematics: 1. Develop fluency with multi-digit multiplication and develop understanding of division. 2. Develop an understanding of fraction equivalence, addition and subtraction of fractions with like denominators and multiplication of fractions by whole numbers. 3. Understand that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measurements, and symmetry.

Scope And Sequence

Timeframe	Unit	Instructional Topics
6 Week(s)	Numbers and Operations of Whole Numbers	1. Place Value 2. Operations with Addition and Subtraction-CCSS only 3. Understanding factors, multiples, prime, and composite numbers
5 Week(s)	Numbers and Operations of Multiplication and Division	1. Properties of Operations of Multiplication and Division
8 Week(s)	Fractions	1. Addition and Subtraction of Fractions 2. Ordering Fractions 3. Multiplying Fractions
2 Week(s)	Decimals Part 1	1. Place Value and Operations with Decimals
2 Week(s)	Creating and Interpreting Tables and Graphs	1. Graphs
6 Week(s)	Geometry-Angles, Lines, Area, Perimeter, and Symmetry	1. Geometric Measurement 2. Geometric Terminology 3. Area and Perimeter 4. Symmetry
3 Week(s)	Measurement-CCSS only	1. Measurement Conversion 2. Problem Solving with Measurement
1 Week(s)	Geometry-Solid Figures and Volume	1. Geometric Terminology
3 Week(s)	Decimals Part 2	1. Operations with Decimals
174 Day(s)	Lisa Carter 2015	1. 4.OA.1 Interpret a multiplication equation as a comparison 2. 4.OA.2 Operations and Algebraic Thinking Use the Four Operations with whole numbers to solve problems 3. 4.OA.3 Operations and Algebraic Thinking Solve multi step word problems 4. 4.OA.4 Operations and Algebraic Thinking Factors and Multiples 5. 4.OA.5 Operations and Algebraic Thinking Generate and analyze number and shape patterns 6. 4.NBT.1 Number and Operations in Base Ten Generalize place value understanding 7. 4.NBT.2 Number and Operations in Base Ten Generalize place value understanding for multi-digit whole numbers Read, write, and compare multi-digit whole numbers 8. 4.NBT.3 Number and Operations in Base Ten Generalize Place Value and Round 9. 4.NBT.4 Number and Operations in Base Ten Use Place Value and properties of operations Fluently add and subtract multi digit whole numbers 10. 4.NBT.5 Number and Operations in Base Ten Use Place Value and properties of operations multiply 4 digits by 1 digit, and 2 digits by 2 digits 11. 4.NBT.6 Number and Operations in base Ten Use Place Value to find quotients and remainders up to 4 digits 12. 4.NF.1 Number and Operations- Equivalent Fractions 13. 4.G.1 Geometry Draw/Identify lines and angles; Classify shapes 14. 4.MD.1 - know relative sizes of measurements 15. 4.G.2 Classify figures 16. 4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). 17. 4.MD.2 - Use the four operations to solve word problems using measurements. 18. 4.NF.2 Number and Operations- Fractions Extend understanding of fraction equivalence- comparing fractions 19. 4.G.3 symmetry 20. 4.MD.3 - Apply area and perimeter formulas in real world and math problems.

21. 4.MD.5.a Recognize angles as geometric shapes that formed wherever two rays share a common endpoint and understand that an angle is measured with reference to a circle.
22. 4.NF.3a Number and Operations- Fractions Build Fractions from unit fractions addition and subtraction
23. 4NF.3b Number and Operations- Fractions Build fractions from unit fractions Decompose a fraction into a sum of fractions with the same denominator
24. 4.NF.3c Number and Operations Add and subtract mixed numbers with like denominators in more than one way
25. 4.NF.3d Number and Operations- Fractions Solve word problems involving addition and subtraction of fractions
26. 4.NF.4a Number and Operations- multiplication to multiply a fraction by a whole number.
27. 4.NF.5 - Express fractions with denominators of 10 to an equivalent fraction with denominator of 100.
28. K.MD.5.b Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand an angle that turns through n one-degree as a measure of n degrees
29. 4.NF.6 - Use decimal notation for fractions with denominators of 10 or 100.
30. 4NF.4b Number and Operations- Fractions multipoly fraction by a whole number
31. 4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.
32. 4.NF.7 - compare two decimals to hundredths.
33. 4NF.4c Number and Operations -Fractions Solve word problems
34. 4.MD.7 Recognize angle measure as additive.
35. 4.G.1 Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines.
36. 4.G.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.
37. 4.G.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.

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: Numbers and Operations of Whole Numbers

Duration: 6 Week(s)

Unit Description/Transfer Goal

Numbers and Operations of Whole Numbers will focus on place value understanding up to 1,000,000 and perform multi-digit arithmetic with addition and subtraction operations.

Students will be able to independently use their learning to read and understand the value of numbers with multi-digit numbers. The students will focus on additon and subtraction operations with whole numbers to solve problems.

Enduring Understandings

Students will understand that numbers can be manipulated through mathematical operations to change the value.

Students will understand that numbers can be used for different purposes, and numbers can be classified and represented in different ways.

Students will understand that doing mathematics involves a variety of processes including problem solving, reasoning, communicating, connecting, and representing.

Essential Skills

How does the position of a digit affect its value in greater whole numbers?
What is the importance of rounding in computation and problem solving?
What information and strategies would you use to solve a multi-step word problem?
Is estimation more appropriate than finding an exact number?

Teaching Points

Base ten chart through millions, base ten blocks, multiplication chart, flipcharts in faculty drive, Singapore math materials

Essential Vocabulary

place, value, digit, whole numbers, (ones, tens, hundreds, thousands, ten-thousands, hundred-thousands, millions place), (standard-*figure*, expanded, and word form), compare, order, greater than, less than, equal to, round, properties of operations, calculations, addition, sum, subtraction, difference, multiplication, product, division, quotient, divisor, dividend, remainder, algorithm, equations, rectangular arrays, area models, factor, multiple, prime number, composite number, equation, comparison, set, ring, verbal statement, symbol, four operations (addition, subtraction, multiplication, division), unknown quantity (variable), mental computation, estimation, rounding, patterns, pattern rule, odd number and even number

Topic: Place Value
Duration: 3 Week(s)

Student Learning Plan

Identify place and value through 1,000,000, rounding through 1,000,000, and create and recognize patterns.

Learning Targets

Compare and contrast the terms: place and value

Assessment: Proficient students will chart a whole number by accurately using the place and value of a number.

common formative assessment

Read and write multi-digit numbers using base-ten numerals

Assessment: Proficient students will communicate precisely to others about reading and writing mult-digit numbers.
Common Formative Assessment

Create patterns from a given set of information

Assessment: Proficient students will create patterns from given information to make sense of problems.
Common Formative Assessment

Make a comparison between two multi-digit numbers using >, <, or = symbols

Assessment: Proficient students will look for and identify repeated reasoning when making a comparison between two multi-digit numbers by finding the greatest place value with different numbers to be compared.
Common Formative Assessment

Construct viable arguements for rounding multi-digit numbers to any place

We have discussed the common language for rounding in our grade level meetings and the saying we are all using is "4 or less you must regress and 5 or more you must soar." If my number is 453 and we are rounding to the 10's place we are putting a line under the number in the 10's place 453 and then drawing an arrow to the number in the 1's place. We are calling that number the neighbor number.

Assessment: Proficient students will round a whole number to a given place and explain the process of rounding the given number.
Common Formative Assessment

Topic: Operations with Addition and Subtraction-CCSS only
Duration: 2 Day(s)

Student Learning Plan

Solve multi-digit addition and subtraction.

Learning Targets

Fluently add multi-digit whole numbers

Assessment: Proficient students will work with a partner to clarify the thinking of the addition process including regrouping.
Observation

Fluently subtract multi-digit whole numbers

Assessment: Proficient students will clarify thinking when solving subtraction problems with regrouping by working with partners to explain the steps.
Observation

Fluently subtract multi-digit whole numbers with zeros

Practice standards for this target will include making sense of problems and persevere in solving them.

Assessment: Proficient students will examine real world problems with money to subract over zeros but setting up the problem correctly and solving by regrouping accurately.
Common Formative Assessment

Topic: Understanding factors, multiples, prime, and composite numbers
Duration: 2 Week(s)

Student Learning Plan

Understand how factors, multiples, and knowledge of prime/composite numbers help to solve multiplication and division problems.

Learning Targets

Justify factor pairs for a whole number 1-100

Practice standards for this target will include constructing viable arguments and critique the reasoning of others.

Assessment: Proficient students will find the greatest common factor between two whole numbers and show the steps to find the greatest common factor.
Common Formative Assessment

Classify and describe numbers by their characteristics, including multiples and common multiples

Assessment: Proficient students will take a given number and analyze it's attributes to find a structure.
Common Formative Assessment

Determine whether a given whole number in the range 1-100 is a prime or composite number

Assessment: Proficient students will categorize a number as prime or composite and explain how prime numbers cannot be divided by any number but it's self and one.
Common Formative Assessment

Unit: Numbers and Operations of Multiplication and Division

Duration: 5 Week(s)

Unit Description/Transfer Goal

Numbers and Operations of Multiplication and Division will focus on performing multi-digit arithmetic with multiplication and division operations.

Students will be able to independently use their learning to read and understand the value of numbers with multi-digit numbers. The students will focus on multiplication and division operations with whole numbers to solve problems, gain familiarity with factors and multiples.

Enduring Understandings

Students will understand that numbers can be manipulated through mathematical operations to change the value.

Students will understand that numbers can be used for different purposes, and numbers can be classified and represented in different ways.

Students will understand that doing mathematics involves a variety of processes including problem solving, reasoning, communicating, connecting, and representing.

Essential Skills

How are mathematical operations related?
What information and strategies would you use to solve a multi-step word problem?
How do number properties assist in computation?

Essential Vocabulary

properties of operations, calculations, multiplication, product, division, quotient, divisor, dividend, remainder, algorithm, equations, rectangular arrays, area models, factor, multiple, prime number, composite number, equation, comparison, set, ring, verbal statement, four operations (addition, subtraction, multiplication, division), unknown quantity (variable), mental computation, estimation, rounding

Topic: Properties of Operations of Multiplication and Division

Duration: 5 Week(s)

Student Learning Plan

Solve multiplication and division problems.

Learning Targets

Create comparisons of multiplication equations

Assessment: Proficient students will use the structure of multiplication equations to find a missing factor or the product.
Common Formative Assessment

Estimating products and quotients

Use rounding rhyme or other rounding strategies (use multiplication before and during multiplication teaching and use division before and during division teaching)
Assessment: observation

Multiply 1-digit by 4-digit whole numbers

Assessment: Proficient students will attend to precision when solving 1-digit by 4-digit whole number problems.
Common Formative Assessment

Multiply 2-digit by 2-digit whole numbers

Assessment: Proficient students will accurately solve 2-digit by 2-digit whole number multiplication and use the structure of solving those problems.
Common Formative Assessment

Divide 4-digit by 1-digit whole numbers

Assessment: Proficient students will solve real world problems using division.
Common Formative Assessment

Problem solving with all operations, including multi-step

Unit: Fractions

Duration: 8 Week(s)

Unit Description/Transfer Goal

The Fractions unit will help students to develop an understanding of fraction equivalence, addition, and subtraction with like denominators, and multiplication of fractions by whole numbers.

Students will be able to independently use their learning to add, subtract, multiply fractions, and compare fractions in real world situations.

Enduring Understandings

Students will understand that proportional relationships express how quantities change in relationship to each other.

Students will understand that any number, measure, numerical expression, algebraic expression, or equation can be represented in an infinite number of ways that have the same value (equivalence).

Essential Skills

How are fractions used in everyday life?

How does comparing quantities describe the relationship between them?

How does a fraction change when added or subtracted to another fraction?

Teaching Points

fraction bars, fraction circles, equivalent fraction bar worksheet (visual model), flipcharts from faculty drive, Singapore materials

Essential Vocabulary

visual fraction model, numerator, denominator (2, 3, 4, 5, 6, 8, 10, 12, 100), part of a whole, equivalent, mixed number, decompose, benchmark fraction, multiple, set, simplest form, simplify, lowest terms, improper fraction, order, and compare

Topic: Addition and Subtraction of Fractions
Duration: 4 Week(s)

Student Learning Plan

Adding and subtracting fractions with like and unlike denominators including mixed numbers and decompose fractions.

Learning Targets

Recognize and find equivalent fractions

Assessment: Proficient students will recogonize and find equivalent fractions by using multiplication and an understanding of the terms numerator and denominator.
Common Formative Assessment

Add and subtract fractions with like and unlike denominators

Assessment: Proficient students will work with a partner to add and subtract fractions with like and unlike denominators.
Common formative assessments

Add and subtract mixed numbers with like and unlike denominators

Assessment: Proficient students will add and subtract mixed numbers with like and unlike denominators while attending to precision.
Common Formative Assessment

Converting mixed numbers to improper fractions and vice versa

Assessment: common formative assessment

Decompose fractions into a sum of fractions with the same denominator-CCSS only

Assessment: Proficient students will communicate with others how to decompose fractions with the same denominator.
Common Formative Assessment

Topic: Ordering Fractions
Duration: 3 Week(s)

Learning Targets

Compare fractions with like denominators

Assessment: Proficient students will discuss with a partner how to compare fractions with like denominators.

Observation

Compare fractions with like numerators

Assessment: Proficient students will use fraction bars to compare fractions with like numerators.
Common Formative Assessment

Compare fractions with unlike numerators and denominators

Assessment: Proficient students will use fraction bars to compare fraction with unlike numerators and denominators.
Common Formative Assessment

Topic: Multiplying Fractions
Duration: 1 Week(s)

Student Learning Plan

Understand a fraction as a multiple and solve problems using multiplication.

Learning Targets

Multiply a fraction by a whole number

Assessment: Proficient students will solve real world situations with a fraction of a set to multiply a fraction by a whole number.
Common Formative Assessment

Understand a fraction as a multiple-CCSS only

Assessment: Proficient students will analyze a fraction as a multiple by explaining to others the process to find a multiple.
Common Formative Assessment

Solve word problems with fractions

Assessment: Proficient students will solve real world word problems involving fractions by writing an equation to solve the problem.
Common Formative Assessment

Unit: Decimals Part 1

Duration: 2 Week(s)

Unit Description/Transfer Goal

The unit on Decimals will extend the base-ten place-value system to decimals.

Students will understand decimal notations for fractions with denominators of 10 or 100 and will be compared by reasoning about their size.

Enduring Understandings

Students will understand that numbers, expressions, measures, and objects can be compared and related to other numbers, expressions, measures, and objects in different ways.

Essential Skills

How is decimal numeration related to whole number numeration?

How can decimals be compared and ordered?

How are fractions and decimals related?

Teaching Points

number line, flip charts from faculty drive, Singapore materials

Essential Vocabulary

tenths, hunderdths, rounded off to 1 decimal place, rounded off to 2 decimal places, fractions, whole numbers, parts of a whole number, number line,

Topic: Place Value and Operations with Decimals

Duration: 2 Week(s)

Student Learning Plan

Express a fraction as a decimal, use decimals as a notation, and compare two decimals to hundredths.

Learning Targets

Express a fraction with decimal notation

Assessment: Proficient students will make sense and persevere in converting fractions and decimals.
Common Formative Assessment

Compare two decimals to hundredths

Assessment: Proficient students will make sense of decimal places to order or compare decimals to the hundredths place.
Common Formative Assessment

Unit: Creating and Interpreting Tables and Graphs

Duration: 2 Week(s)

Unit Description/Transfer Goal

Make a line plot to display data and use the information to solve addition and subtraction of fractions and interpret bar graphs to solve real world problems.

Enduring Understandings

Students will understand that data can be represented visually using tables, charts, and graphs and the type of data determines the best choice of visual representation.

Essential Skills

How can graphs be used to represent data and answer questions?

How can numbers be used to describe certain data sets?

Teaching Points

chart paper, flipcharts from faculty drive, Singapore materials,

Essential Vocabulary

bar graphs, axis, scale, title, labels for x axis and y axis, line plots, horizonal, vertical, data,

Topic: Graphs

Duration: 2 Week(s)

Learning Targets

Draw and interpret a bar graph

Assessment: Proficient students will use models such as graphs to represent information accurately.
Common Formative Assessment

Create and interpret line plots-CCSS only

Assessment: Proficient students will understand the relationship between problem scenarios and mathematical representation using a line plot.
Common Formative Assessment

Interpret other common graphs (if time)

Proficient students will be able to read and understand line graphs, pie charts, pictographs, and frequency tables.

Assessment: observation

Unit: Geometry-Angles, Lines, Area, Perimeter, and Symmetry

Duration: 6 Week(s)

Unit Description/Transfer Goal

Recognize line types and angles with two dimensional geometric figures. Apply the area and perimeter formulas for rectangles in real world and mathematical problems.

Enduring Understandings

Students will understand that when they apply the formulas for area and perimeter of rectangles real world and mathematical problems can be solved.

Essential Skills

What role do angles play in everyday life?

How are protractors useful to make angles?

How are area and perimeter related in geometry?

Teaching Points

chart paper, ruler, protractor, flipchart on faculty, Singapore materials

Essential Vocabulary

point, end point, line, line segment, ray, angle (acute, right, obtuse, 90º angle, greater than 90º angle, less than 90º angle), perpendicular lines, parallel lines, right triangle, attributes, two-dimensional figures, three-dimensional figures, line of symmetry, protractor, degrees,

Topic: Geometric Measurement

Duration: 1 Week(s)

Student Learning Plan

Manipulate a protractor to decompose and measure angles.

Learning Targets

Compare angles and circles with measuring angles in whole-number degrees

Assessment: Proficient students will use protractors to compare angles and circles with measuring angles in whole-number degrees.
Common Formative Assessment

Decompose angle degrees to solve problems with angles using addition and subtraction

Assessment: Proficient students will explain how to decompose angle degrees to solve problems using addition or subtraction.
Common Formative Assessment

Topic: Geometric Terminology

Duration: 2 Week(s)

Student Learning Plan

Draw and classify lines, angles, and shapes.

Learning Targets

Draw and identify points, endpoints, lines, line segments, rays-CCSS only

Assessment: Proficient students will determine two-dimensional figures by the attributes given for points, endpoints, lines, line segments, or rays.
Observation

Draw and identify perpendicular and parallel lines

Assessment: Proficient students will construct viable arguments why a line relationship is parallel or perpendicular giving evidence to support the reasoning.
Common Formative Assessment

Describe two-dimensional figures using their attributes-CCSS only

Assessment: Proficient students will work in small groups to examine two-dimensional figures and list the attributes.
Observation

Topic: Area and Perimeter

Duration: 2 Week(s)

Learning Targets

Apply perimeter formulas for rectangles

Assessment: Proficient students will apply the mathematical formula for perimeter to answer real world problems.
Common Formative Assessment

Apply area formulas for rectangles

Assessment: Proficient students will apply the mathematical formula for area to solve real world problems.
Common Formative Assessment

Topic: Symmetry

Duration: 1 Week(s)

Learning Targets

Recognize, identify, and draw lines of symmetry

Assessment: Proficient students will identify objects in real world settings with lines of symmetry and expain why the objects are symmetrical.
Common Formative Assessment

Unit: Measurement-CCSS only

Duration: 3 Week(s)

Unit Description/Transfer Goal

Measurement will consist of students solving problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Students will be able to independently use their learning to use customary and metric units to accurately convert larger units to smaller units.

Enduring Understandings

Students will understand the relative sizes of measurement units within one system and that different units of measurement within a system are related through a formula. The way that data is collected, organized and displayed influences interpretation.

Essential Skills

Why do we use precise language when we talk about measurement?

How would you explain to a friend over the phone how to build a table exactly like one in your house?

Why is it important for a cook to use the exact fractions in the batch of cookies they bake?

How does what I measure influence how we measure?

Teaching Points

ruler, meter stick, yard stick, clock, balance, scale, flip charts from faculty drive, Singapore materials, liter graduate,

Essential Vocabulary

kilometer (km), meter (m), centimenter (cm), feet (ft), inch (in), kilogram (kg), grams (g), pound (lb), ounce (oz.), liter (l), milliliter (ml), hour (hr), minute (min), second (sec.), column, table, conversion (convert), equivalent, number pairs, and linear measurement

Topic: Measurement Conversion

Duration: 2 Week(s)

Student Learning Plan

Convert larger units to smaller units in the customary and metric systems.

Learning Targets

Identify sizes of measurement units in the standard/customary system

Assessment: Proficient students will use appropriate tools to identify sizes of units in standard/customary system and convert them to different units.
Common Formative Assessment

Identify sizes of measurement units in the metric system

Assessment: Proficient students will use appropriate tools to measure units in the metric unit and convert using mathematical formulas to different units.
Common Formative Assessment

Convert larger units to smaller units

Assessment: Proficient students will use appropriate formulas to convert larger units to smaller units in different measurement systems.
Common Formative Assessment

Topic: Problem Solving with Measurement

Duration: 1 Week(s)

Student Learning Plan

Solve problems with area, perimeter, the four operations with measurement or interpret a line plot.

Learning Targets

Solve word problems with measurement

Unit: Geometry-Solid Figures and Volume

Duration: 1 Week(s)

Unit Description/Transfer Goal

In Geometry students will explore lines and angles by drawing and identifying lines and angles, and classify shapes by properties of their lines and angles. Students will be able to independently use their learning to use geometric terms to describe the location and position of objects in our world.

Enduring Understandings

Students will understand that geometric terminology and specific tools offers ways to interpret two and three dimensional figures.

Essential Skills

Why is precision important when describing geometric objects?

Essential Vocabulary

attributes, two-dimensional figures, three-dimensional figures, line of symmetry, and line plots

4th Grade Mathematics

Mathematics

Grade(s) 4th, Duration 1 Year
Required Course

Topic: Geometric Terminology **Duration:** 1 Week(s)

Student Learning Plan

Draw and classify two-dimensional and three-dimensional shapes using their attributes such as symmetry and volume.

Learning Targets

Identify the cube as a solid figure

Assessment: Proficient students will identify a cube as a solid figure by explaining that it has height, width, and length.
Common Formative Assessment

Recognize and measure volume

Assessment: Proficient students will recognize that volume takes up space and a mathematical formula can be applied to find the volume of an object.
Common Formative Assessment

Unit: Decimals Part 2

Duration: 3 Week(s)

Unit Description/Transfer Goal

Students will be introduced to the four operations with decimals.

Topic: Operations with Decimals **Duration:** 3 Week(s)

Learning Targets

Add and subtract decimals

Multiply and divide with decimals

Unit: Lisa Carter 2015

Duration: 174 Day(s)

Topic: 4.OA.1 Interpret a multiplication equation as a comparison **Duration:** 10 Day(s)

Student Learning Plan

Operations and Algebraic Thinking Use the four operation with whole numbers to solve problems.

Learning Targets

*Interpret products of whole numbers (DOK 3)
*Students need to know how to read (verbalize) multiplication equation (DOK 1)
*Students should be able to identify and verbalize which quantity is being multiplied and which tells how many times (DOK 1)
*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)

Topic: 4.OA.2 Operations and Algebraic Thinking Use the Four Operations with whole numbers to solve problems **Duration:** 30 Day(s)

Student Learning Plan

Operations and Algebraic Thinking Use the Four Operations with whole numbers to solve problems

Learning Targets

*know from memory all products of two one-digit numbers (DOK)
*Students need to understand contexual problems - what is being multiplied and a symbol to show the unknown ($6 X 3 = ___) (DOK 1)
*use multiplication and division within 100 (DOK 1)
* 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 (DOK 2)

Topic: 4.OA.3 Operations and Algebraic Thinking Solve multi step word problems **Duration:** 30 Day(s)

Student Learning Plan

4.OA3 Operations and Algebraic Thinking Use the Four Operations with whole numbers to solve problems

Learning Targets

*the function of whole number operations (DOK 1)
*how to use a letter for an unknown (DOK 2)
*how to do mental computation, estimating and rounding (DOK 1)
*know from memory all products of two one-digit numbers (DOK)
*Students need to understand contexual problems - what is being multiplied and a symbol to show the unknown ($6 X 3 = ___) (DOK 1)
*use multiplication and division within 100 (DOK 1)
*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)

Topic: 4.OA.4 Operations and Algebraic Thinking Factors and Multiples

Duration: Ongoing

Student Learning Plan

4.OA.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.

Learning Targets

Grade 3 students can fluently divide and multiply within 100 (DOK 1)
*Students will determine the unknown in a multiplication or division problem
*factors and multiples
*composite or prime (DOK 2)
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 (DOK 2)

Topic: 4.OA.5 Operations and Algebraic Thinking Generate and analyze number and shape patterns

Duration: Ongoing

Student Learning Plan

4.OA5 Operations and Algebraic Thinking Use the Four
Operations with whole numbers to solve problems

Learning Targets

*Students will identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. (DOK 3)
*Students will know what is a # or shape pattern following a given rate (DOK 1)
*Students will know the definition of a pattern (DOK 2)
* Students will 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)

Topic: 4.NBT.1 Number and Operations in Base Ten Generalize place value understanding

Duration: Ongoing

Student Learning Plan

4.NBT1 Number and Operations in Base Ten Generalize place value understanding for multi-digit whole numbers

Learning Targets

Grade 3 students can identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain
why 4 times a number can be decomposed into two equal addends. (DOK 1)

*Students will know what is a # or shape pattern following a given rate.

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 1)

4th Grade Mathematics

Mathematics

Grade(s) 4th, Duration 1 Year
Required Course

Topic: 4.NBT.2 Number and Operations in Base Ten Generalize place value understanding for multi-digit whole numbers Read, write, and compare multi-digit whole numbers — **Duration:** 30 Day(s)

Student Learning Plan

4.NBT2 Number and Operations in Base Ten Generalize place value understanding for multi-digit whole numbers

Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.

Learning Targets

Grade 2 students can Compare two three-digit numbers based on meanings of the hundreds,tens, and ones digits, using >, =, and < symbols to record the results of comparisons. (DOK 1)

Students should know how to say numbers correctly. Students need to know the symbols. (DOK 1)

Students will 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. Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. (DOK 1)

Topic: 4.NBT.3 Number and Operations in Base Ten Generalize Place Value and Round — **Duration:** 30 Day(s)

Student Learning Plan

4.NBT3 Number and Operations in Base Ten Generalize place value understanding for multi-digit whole numbers

Topic: 4.NBT.4 Number and Operations in Base Ten Use Place Value and properties of operations Fluently add and subtract multi digit whole numbers — **Duration:** 30 Day(s)

Student Learning Plan

NBT4 Number and Operations in Base Ten Use Place Value and properties of operations Fluently add and subtract multi digit arithmetic

Topic: 4.NBT.5 Number and Operations in Base Ten Use Place Value and properties of operations multiply 4 digits by 1 digit, and 2 digits by 2 digits — **Duration:** 30 Day(s)

Student Learning Plan

4.NBT5 Number and Operations in Base Ten Use Place Value and properties of operations Fluently add and subtract multi digit arithmetic

Topic: 4.NBT.6 Number and Operations in base Ten Use Place Value to find quotients and remainders up to 4 digits — **Duration:** Ongoing

Student Learning Plan

4.NBT Number and Operations in Base Ten Use Place Value understanding and properties of operations to perform multi-digit arithmetic.

Topic: 4.NF.1 Number and Operations- Equivalent Fractions — **Duration:** Ongoing

Student Learning Plan

4.NF1 Number and Operations- Fractions Extend Understanding of fraction equivalence and ordering

Topic: 4.G.1 Geometry Draw/Identify lines and angles; Classify shapes — **Duration:** Ongoing

Student Learning Plan

Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Topic: 4.MD.1 - know relative sizes of measurements — **Duration:** Ongoing

Student Learning Plan

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

Topic: 4.G.2 Classify figures — **Duration:** Ongoing

Student Learning Plan

Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Topic: 4.MD.4 Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). — **Duration:** Ongoing

Student Learning Plan
Measurement and Data: Represent and interpret data.

Topic: 4.MD.2 - Use the four operations to solve word problems using measurements. **Duration:** Ongoing

Student Learning Plan
Measurement and Data - Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Topic: 4.NF.2 Number and Operations- Fractions Extend understanding of fraction equivalence- comparing fractions **Duration:** Ongoing

Student Learning Plan
4NF2 Number and Operations- Fractions Extend understanding of fraction equivalence and ordering

Topic: 4.G.3 symmetry **Duration:** Ongoing

Student Learning Plan
Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Topic: 4.MD.3 - Apply area and perimeter formulas in real world and math problems. **Duration:** Ongoing

Student Learning Plan
Measurement and Data - Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

Topic: 4.MD.5.a Recognize angles as geometric shapes that formed wherever two rays share a common endpoint and understand that an angle is measured with reference to a circle. **Duration:** Ongoing

Student Learning Plan
Measurement and Data: Geometric measurement: understand concepts of angle and measure angles.

Topic: 4.NF.3a Number and Operations- Fractions Build Fractions from unit fractions addition and subtraction **Duration:** Ongoing

Student Learning Plan
4.NF3a Number and Operations- Fractions Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Topic: 4NF.3b Number and Operations- Fractions Build fractions from unit fractions Decompose a fraction into a sum of fractions with the same denominator **Duration:** Ongoing

Student Learning Plan
4NF.3b Number and Operations-Fractions Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Topic: 4.NF.3c Number and Operations Add and subtract mixed numbers with like denominators in more than one way **Duration:** Ongoing

Student Learning Plan
4NF.3c Number and Operations- Fractions Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Topic: 4.NF.3d Number and Operations- Fractions Solve word problems involving addition and subtraction of fractions **Duration:** Ongoing

Student Learning Plan
4.NF.3d Number and Operations- Fractions Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Topic: 4.NF.4a Number and Operations- multiplication to multiply a fraction by a whole number. **Duration:** Ongoing

Student Learning Plan
4NF.4a Number and Operations- Fractions Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Topic: 4.NF.5 - Express fractions with denominators of 10 to an equivalent fraction with denominator of 100. **Duration:** Ongoing

Student Learning Plan
Number and Operations-Fractions-Understand decimal notation for fractions, and compare decimal fractions.

Topic: K.MD.5.b Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand an angle that turns through n one-degree as a measure of n degrees — **Duration:** Ongoing

Student Learning Plan
Measurement and Data: Geometric Measurement: Understand concepts of angle and measure angles.

Topic: 4.NF.6 - Use decimal notation for fractions with denominators of 10 or 100. — **Duration:** Ongoing

Student Learning Plan
Number and Operations - Fractions - Understand decimal notation for fractions, and compare decimal fractions.

Topic: 4NF.4b Number and Operations- Fractions multipoly fraction by a whole number — **Duration:** Ongoing

Student Learning Plan
4NF.4b Number and Operations- Fractions Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

Topic: 4.MD.6 Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. — **Duration:** Ongoing

Student Learning Plan
Measurement and Data: Geometric Measures: Understand concepts of angle and measure angles.

Topic: 4.NF.7 - compare two decimals to hundredths. — **Duration:** Ongoing

Student Learning Plan
Number and Operations - Fractions - Understand decimal notation for fractions, and compare decimal fractions.

Topic: 4NF.4c Number and Operations -Fractions Solve word problems — **Duration:** Ongoing

Student Learning Plan
4NF.4c Number and Operations Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.

Topic: 4.MD.7 Recognize angle measure as additive. — **Duration:** Ongoing

Student Learning Plan
Measurement and Data: Geometric measurement: Understand concepts of angle and measure.

Topic: 4.G.1 Draw points, lines, line segments, rays, angles, and perpendicular and parallel lines. — **Duration:** Ongoing

Student Learning Plan
Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Topic: 4.G.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. — **Duration:** Ongoing

Student Learning Plan
Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

Topic: 4.G.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. — **Duration:** Ongoing

Student Learning Plan
Geometry: Draw and identify lines and angles, and classify shapes by properties of their lines and angles.