4th Grade Mathematics Instructional Toolkit

The 4th Grade Mathematics Instructional Toolkit is intended to assist teachers with planning lessons aligned to the Florida Standards. This toolkit is not intended to replace your district's curriculum, but rather it serves to support the teaching and learning of the 4th grade Mathematics Florida Standards. This toolkit includes a breakdown of the standards, standards aligned resources and information related to the 4th Grade Mathematics Florida Standards Assessment (FSA). The resources presented in this document may only cover portions of the aligned standard and represent only a small sample of those available on CPALMS.

4th Grade Mathematics Florida Standards Assessment

This section highlights some key information related to the 4th Grade Mathematics FSA that can be found on the FSA Portal. These items include the Test Design Summary and Blueprint, Test Item Specifications and FSA Practice Tests.

Test Design Summary and Blueprint

The 4th grade mathematics standards can be broken down into four major reporting categories as assessed on the 4th Grade Mathematics FSA with a corresponding weight. This information can be found on page 2 of the Test Design Summary and Blueprint. The reporting categories listed below link to their respective places within this document.

- **Operations and Algebraic Thinking (21%)**
- **Numbers and Operations in Base Ten (21%)**
- **Number and Operations- Fractions (25%)**
- **Measurement, Data, and Geometry (33%)**

Test Item Specifications

Each grade-level test item specifications document indicates the alignment of items with the Florida Standards. Assessment limits are included in the specifications, which define the range of content knowledge in the assessment items for the standard. Sample items for each standard are also included in the specifications document. Each standard in this toolkit lists the corresponding page number in the specifications document.

Practice Tests

Practice tests are available for students to become familiar with the various item types that may be used on the 4th Grade Mathematics FSA.

CPALMS: Official Source of Florida Standards

This section features information and tools that are found on CPALMS. These resources include course descriptions, formative assessment resources, mathematical practices, depth of knowledge ratings and FloridaStudents.org resources.

4th Grade Mathematics Course Description

Course descriptions provide an overview for a course and designate which standards are in that course. The 4th grade mathematics course description includes resources for all 44 standards within the 4th grade mathematics course.

Mathematics Formative Assessment System (MFAS)

One resource available on CPALMS that has been designed specifically for mathematics instruction is the Mathematics Formative Assessment System (MFAS). The system includes a task or problem that teachers can implement with their students. It also includes various levels of rubrics that help the teacher interpret students' responses. In addition to using the MFAS tasks as formative assessments for students, these tasks can be used by teachers to plan lessons that are closely aligned to the standards.

Mathematical Practices

The Mathematical Practices are habits of mind that describe varieties of expertise that mathematics educators at all levels should seek to develop in their students. The Mathematical Practices should be infused during the course and will be assessed throughout the 4th Grade Mathematics FSA. More information about each Mathematical Practice can be found by clicking on the links below.

MAFS.K12.MP.1.1 Make sense of problems and persevere in solving them.

MAFS.K12.MP.2.1 Reason abstractly and quantitatively.

MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.

MAFS.K12.MP.4.1 Model with mathematics.

MAFS.K12.MP.5.1 Use appropriate tools strategically.

MAFS.K12.MP.6.1 Attend to precision.

MAFS.K12.MP.7.1 Look for and make use of structure.

MAFS.K12.MP.8.1 Look for and express regularity in repeated reasoning.

Depth of Knowledge

Florida has adopted Webb's four-level Depth of Knowledge (DOK) model of content complexity as a means of classifying the cognitive demand presented by the Florida Standards. Content complexity increases as the levels progress from Level 1 Recall to Level 4 Extended Thinking. It is important to distinguish between the DOK rating for a given standard and the possible DOK ratings for assessment items designed to address the standard. This is particularly important for assessment purposes, since 50% or more of assessment items associated with a given standard should meet or exceed the DOK level of the standard. The DOK Levels are identified for each standard throughout this document. Please visit the CPALMS Content Complexity page for more information about the DOK complexity for standards. For more information about the DOK complexity for mathematics assessments, please visit page 9 of the mathematics Test Design Summary and Blueprint on the FSA Portal.

Florida Students

Resources specifically designed with students in mind are available on Florida Students. Florida Students is an interactive site that provides educational resources aligned to the Florida Standards.

Operations and Algebraic Thinking

MAFS.4.OA.1 Use the four operations with whole numbers to solve problems.

MAFS.4.OA.1.1

DOK Level 1: Recall

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.

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Resources:

Bar Model Math- Twice as Nice

Resource Type: Lesson Plan

In this lesson students will solve real world problems that have multiplicative comparisons in them. They will use the strategy of bar models to solve the problems.

Animal Photographs

Resource Type: MFAS Formative Assessment

Students read a multiplicative comparison word problem and are asked to write an equation that matches the problem.

Writing an Equation to Match a Word Problem

Resource Type: MFAS Formative Assessment

Students write an equation to match a given word problem.

MAFS.4.OA.1.2

DOK Level 2: Basic Application of Skills & Concepts

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.

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Resources:

Comparing Money Raised

Resource Type: Problem-Solving Task

The purpose of this task is to give students a better understanding of using four operations to solve problems.

Books and Yarn

Resource Type: MFAS Formative Assessment

Students are asked to write equations to represent two multiplicative comparison problems and to then solve the problems.

Dogs as Pets
Resource Type: MFAS Formative Assessment
Students are asked to write equations to represent two multiplicative comparison problems and to then solve the problems.

MAFS.4.OA.1.3

DOK Level 2: Basic Application of Skills & Concepts

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.
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Resources:

"Express Yourself!" with Math Story Chains
Resource Type: Lesson Plan
Students work in small groups to write math story chains (multi-step real world problems) and write expressions or equations for their story chains.

Juice Boxes
Resource Type: MFAS Formative Assessment
Students are given a two-step word problem and are asked to solve the problem and write an equation with a letter representing the unknown in the equation.

Roller Coaster Rides
Resource Type: MFAS Formative Assessment
Students are given a multistep word problem to solve that requires interpreting remainders.

MAFS.4.OA.1.b

DOK Level 3: Strategic Thinking & Complex Reasoning

Determine the unknown whole number in an equation relating four whole numbers using comparative relational thinking. *For example, solve 76 + 9 = n + 5 for n by arguing that nine is four more than five, so the unknown number must be four greater than 76.*

Also Assesses: **MAFS.4.OA.1.a** Determine whether an equation is true or false by using comparative relational thinking. *For example, without adding 60 and 24, determine whether the equation 60 + 24 = 57 + 27 is true or false.*
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Resources:

Is My Equation TRUE or FALSE?
Resource Type: Lesson Plan
In this lesson, students will determine if equations are true or false and justify their reasoning using relational thinking.

Can You Compare to Find the Missing Number in an Equation?
Resource Type: Problem-Solving Task
Students will be able to compare and solve equations using comparative relational thinking. This lesson only addresses addition, not the other operations. Solving these equations will require the students to mentally evaluate to determine if it is true or false. The students will also determine the unknown number in some equations.

Determining if an Equation is True
Resource Type: MFAS Formative Assessment
Students are asked to determine if each of two equations involving subtraction is true by comparing mathematical expressions and without actually carrying out the calculations.

Comparative Relational Thinking in a Division Equation
Resource Type: MFAS Formative Assessment
Students are asked to use comparative relational thinking to determine the value of an unknown number.

MAFS.4.OA.2 Gain familiarity with factors and multiples.

MAFS.4.OA.2.4

DOK Level 2: Basic Application of Skills & Concepts

Investigate factors and multiples.

a. Find all factor pairs for a whole number in the range 1–100.
b. 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.
c. Determine whether a given whole number in the range 1–100 is prime or composite.

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Resources:

Recognizing Prime and Composite Numbers
Resource Type: Tutorial
This Khan Academy tutorial video reviews how to determine if a number is prime or composite.

Factor That!
Resource Type: Lesson Plan
This is a foundational lesson in which the students will visually see the relationship between factors and multiples. As a result of this hands on lesson and guided discussion, they will learn to identify the factors of a given number.

Factor Pairs
Resource Type: MFAS Formative Assessment
Students are asked to find all the factor pairs of a given number and identify the number as a multiple of the factors.

Multiples of Six
Resource Type: MFAS Formative Assessment
Students determine if a given number is a multiple of six, both with and without context.

MAFS.4.OA.3 Generate and analyze patterns.

MAFS.4.OA.3.5

DOK Level 2: Basic Application of Skills & Concepts

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.*

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Resources:

Number Pattern Example: Growing Sequence
Resource Type: Tutorial
In this Khan Academy tutorial video a table is used to track a growing sequence of design.

Doubles Plus One
Resource Type: Problem-Solving Task
The purpose of this task is to help students gain a better understanding of patterns. This task is meant to be used in an instructional setting.

Baseball Cards
Resource Type: MFAS Formative Assessment
Students generate a number pattern based on a given rule and explain the pattern found.

Shape Patterns
Resource Type: MFAS Formative Assessment
Students are asked to analyze a shape pattern, continue the pattern, and identify what a future shape will be if the pattern continues.

Number and Operations in Base Ten

MAFS.4.NBT.1 Generalize place value understanding for multi-digit whole numbers.

MAFS.4.NBT.1.1

DOK Level 1: Recall

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.*

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Resources:

10X Bigger!

Resource Type: Lesson Plan

In this lesson students will move from constructing concrete models of what happens to a number when you multiply the number by 10 into drawing their own pictorial representations of the same process with numbers up to 1,000. They will develop an understanding of the rule *'a digit in one place represents ten times what it represents in the place to its right'* and apply this rule to a variety of situations.

Terrific Tim's Ten Tiny Toes

Resource Type: Lesson Plan

Students will learn how a digit in one place represents ten times what it represents in the place to its right. Students will model and solve real-world problems on their own and with their friends using word problems, snacks, and their friends' toes!

Base Ten Place Value

Resource Type: MFAS Formative Assessment

Students are given opportunities to explain the relationship between place value and the power of ten in multiplying and dividing.

Comparing Amounts of Baseball Cards

Resource Type: MFAS Formative Assessment

Students are asked to compare the value of the digit *three* in 35 baseball cards to the value of the digit *three* in 350 baseball cards.

MAFS.4.NBT.1.2

DOK Level 2: Basic Application of Skills & Concepts

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.

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Resources:

Regrouping Numbers: 4,500 = 3 thousands + ?
Resource Type: Tutorial
In this Khan Academy video tutorial, you will look at regrouping a number by different place values.

Ordering 4-Digit Numbers
Resource Type: Problem-Solving Task
It is common for students to compare multi-digit numbers just by comparing the first digit, then the second digit, and so on. This task includes three-digit numbers with large hundreds digits and four-digit numbers with small thousands digits so that students must infer the presence of a 0 in the thousands place in order to compare. It also includes numbers with strategically placed zeros and an unusual request to order them from greatest to least in addition to the more traditional least to greatest.

Collections
Resource Type: MFAS Formative Assessment
Students are asked to compare two numbers in the context of a word problem and write an inequality statement showing the relationship between the numbers.

Numbers in Expanded Form
Resource Type: MFAS Formative Assessment
Students are asked to write numbers in both standard form (as base ten numerals) and expanded form.

Using Word and Expanded Form
Resource Type: MFAS Formative Assessment
Students compare two numbers, one given in word form and the other given in expanded form.

MAFS.4.NBT.1.3

DOK Level 1: Recall

Use place value understanding to round multi-digit whole numbers to any place.
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Resources:

Just Hanging A-Round
Resource Type: Lesson Plan
In this lesson, students will demonstrate knowledge of rounding in problem solving with or without the aid of a number line.

Rounding Numbers
Resource Type: MFAS Formative Assessment
Students are asked to round four numbers to different places and explain their reasoning.

MAFS.4.NBT.2 Use place value understanding and properties of operations to perform multi-digit arithmetic.

MAFS.4.NBT.2.4

DOK Level 1: Recall

Fluently add and subtract multi-digit whole numbers using the standard algorithm.

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Resources:

Adding It All Up with the Standard Algorithm
Resource Type: Original Tutorial
Learn to add multi-digit numbers using the standard algorithm in this interactive tutorial.

Subtracting: Regrouping Twice
Resource Type: Tutorial
In this video tutorial from Khan Academy, learn how to subtract in situations that require regrouping twice using the expanded forms of numbers, as well as the standard algorithm.

Subtraction Attraction
Resource Type: Lesson Plan
In this lesson, students will demonstrate fluency in using the standard algorithm to complete story problems involving subtraction with regrouping using multi-digit whole numbers.

Addition Using the Standard Algorithm
Resource Type: MFAS Formative Assessment
Students are asked to solve two addition problems using the standard algorithm.

Fill in the Missing Number
Resource Type: MFAS Formative Assessment
Students are asked to complete subtraction problems using the standard algorithm.

MAFS.4.NBT.2.5

DOK Level 2: Basic Application of Skills & Concepts

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.

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Resources:

Multiplying: How to Use the Area Model
Resource Type: Tutorial
In this video tutorial from Khan Academy, view a demonstration of how to set-up an area model for multiplying a two-digit number by a two-digit number on graph or grid paper.

Multiplying: 4-Digits Times 1-Digit
Resource Type: Tutorial
In this Khan Academy video tutorial, view an example of multiplying a 4-digit number by a 1-digit number by expanding the 4-digit number and multiplying by each digit individually. This video will help to build an understanding of the standard algorithm.

2-Digit Array Multiplication
Resource Type: Lesson Plan
This lesson explores a conceptual approach to multiplying two 2-digit numbers. Students will create, explore, describe and record arrays built with place value pieces. The lesson supplies the understanding that will make multiplying multi-digit numbers easy to do.

Multiplying Using an Array or Area Model
Resource Type: MFAS Formative Assessment
Students are asked to multiply a four-digit number by a one-digit number and two, two-digit numbers using an array or area model.

The Produce Shop
Resource Type: MFAS Formative Assessment
Students are asked to multiply a pair of two-digit numbers using a strategy based on place value.

MAFS.4.NBT.2.6

DOK Level 2: Basic Application of Skills & Concepts

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.
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Resources:

I See! Division with the Distributive Property
Resource Type: Lesson Plan
In this lesson, students will use visual models to represent division using the distributive property as a strategy. Students will have an understanding of how to decompose numbers in the context of division problems using an area model.

Book Drive
Resource Type: Tutorial
In this video tutorial from Khan Academy, learn about the importance of place value when dividing. Being able to perform the standard algorithm is the end goal, but it helps to understand how and why this process works.

Book Drive
Resource Type: MFAS Formative Assessment
Students are asked to solve a division problem using a strategy based on place value.

Dividing Using an Area Model
Resource Type: MFAS Formative Assessment
Students are asked to interpret a division problem with a one-digit divisor that has been completed using an area model. If the student is successful, he or she is asked to complete a division problem with a one-digit divisor using an area model.

Numbers and Operations- Fractions

MAFS.4.NF.1 Extend understanding of fraction equivalence and ordering.

MAFS.4.NF.1.1

DOK Level 3: Strategic Thinking & Complex Reasoning

Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.

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Resources:

Equivalent Fractions: Visual Models
Resource Type: Tutorial
This Khan Academy video tutorial illustrates that fraction a/b is equivalent to fraction (a *x* n)/(b x n).

"Are You My Equal?"
Resource Type: Lesson Plan
This lesson gives students the opportunity to identify and model equivalent fractions by making fraction strips, solving situational problems, and creating a model representation of equivalent fractions.

Explaining Fraction Equivalence with Pictures
Resource Type: Problem-Solving Task
The purpose of this task is to provide students with an opportunity to explain fraction equivalence through visual models in a particular example. Students will need more opportunities to think about fraction equivalence with different examples and models, but this task represents a good first step.

Are the Fractions Equivalent
Resource Type: MFAS Formative Assessment
Students partition squares to model two fractions and then determine if the fractions are equivalent.

MAFS.4.NF.1.2

DOK Level 2: Basic Application of Skills & Concepts

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 >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

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Resources:

Fraction Line-Up!

Resource Type: Lesson Plan

In this lesson, students will correctly model and compare fraction pairs and place on the inequality mat attached to this lesson.

Fractions: Let's Compare

Resource Type: Lesson Plan

In this lesson students use area models, number lines, and the benchmark fraction of 1/2 to compare fractions that are less than one and have different numerators and denominators to solve real-world problems.

Compare Fractions

Resource Type: MFAS Formative Assessment

Students are given three sets of fractions to compare and are asked to record the comparisons using the less than, greater than, or equal to symbols.

Corn Farms

Resource Type: MFAS Formative Assessment

Students compare two fractions with unlike denominators in the context of a word problem and record the comparison using an inequality symbol.

MAFS.4.NF.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.

MAFS.4.NF.2.3

DOK Level 2: Basic Application of Skills & Concepts

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.

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Resources:

Leftover Dessert Dilemma
Resource Type: Original Tutorial
In this tutorial, learn how to decompose a fraction into a sum of fractions with common denominators. This tutorial includes practice items for students to apply what they are learning.

What Fraction of Spider Eyes are Looking at Me?
Resource Type: Tutorial
This Khan Academy video tutorial uses authentic pictures to present addition of two fractions with common denominators.

Figuring Out How Much of a Pizza is Left?
Resource Type: Tutorial
This Khan Academy video tutorial solves two word problems using visual fraction models.

Adding and Subtracting Mixed Numbers
Resource Type: MFAS Formative Assessment
Students are given pairs of mixed numbers to either add or subtract.

Anne Marie and the Pizza
Resource Type: MFAS Formative Assessment
Students are asked to solve a word problem that involves adding fractions with like denominators. Students then analyze a word problem involving addition of unlike unit quantities.

Fraction Word Problems
Resource Type: MFAS Formative Assessment
Students are asked to solve a word problem that involves subtracting fractions with like denominators. Students then analyze a word problem involving subtraction of unlike unit quantities.

MAFS.4.NF.2.4

DOK Level 2: Basic Application of Skills & Concepts

Apply 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 × (1/4), recording the conclusion by the equation 5/4 = 5 × (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 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × 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?*

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Resources:

Multiplying a Fraction by a Whole Number
Resource Type: Tutorial
In this Khan Academy video tutorial, visual fraction models are used to represent the expressions and the products.

Sugar in Six Cans of Soda
Resource Type: Problem-Solving Task
This task provides a familiar context allowing students to visualize multiplication of a fraction by a whole number. This task could form part of a very rich activity which includes studying soda can labels.

Training for a Race
Resource Type: MFAS Formative Assessment
Students are asked to multiply an improper fraction by a whole number to solve a word problem and use a visual model or equation to represent the problem.

Fractions and Multiples
Resource Type: MFAS Formative Assessment
Students use a visual fraction model to explain how many sixths are in the given fraction and record their work with an equation.

MAFS.4.NF.3 Understand decimal notation for fractions, and compare decimal fractions.

MAFS.4.NF.3.5
DOK Level 1: Recall

Express a fraction with denominator 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.*

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Resources:

Visually Converting from Tenths to Hundredths
Resource Type: Tutorial
In this Khan Academy video tutorial a fraction is converted from tenths to hundredths using grid diagrams.

Adding Tenths and Hundredths
Resource Type: Problem-Solving Task
The purpose of this task is adding fractions being with a focus on tenths and hundredths. Each part of this task emphasizes a unique aspect of the aligned standard.

Tenths and Hundredths
Resource Type: MFAS Formative Assessment
Students are asked if an equation involving the sum of two fractions is true or false. Then students are asked to find the sum of two fractions.

Seven Tenths
Resource Type: MFAS Formative Assessment
Students express a fraction with a denominator of 10 as an equivalent fraction with a denominator of 100 and are then asked to add the fraction to another fraction with a denominator of 100.

MAFS.4.NF.3.6

DOK Level 1: Recall

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.*
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Resources:

Decimals and Fractions from Grid and Number-Line Representations
Resource Type: Tutorial
The Khan Academy video tutorial uses grid diagrams and number-line representations to say and write equivalent decimals and fractions.

Dynamic Decimals, Fractions and Money!
Resource Type: Lesson Plan
In this lesson, students will realize the connection between fractions, decimals and money through the use of a 100 grid.

Decimals to Fractions
Resource Type: MFAS Formative Assessment
Students are given four decimals and asked to write each as a fraction.

Using Benchmark Fractions on a Number Line
Resource Type: MFAS Formative Assessment
Students are asked to use benchmark fractions to place four decimals on a number line.

MAFS.4.NF.3.7

DOK Level 2: Basic Application of Skills & Concepts

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.

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Resources:

Comparing Two Decimals with a Visual Model

Resource Type: Tutorial

In this Khan Academy tutorial video, two decimals are compared using grid diagrams.

Comparing and Ordering Decimals

Resource Type: Lesson Plan

In this cooperative learning activity, students will have five sets of decimal cards to sort and put in order - least to greatest. The lesson starts with a short whole group activity and then breaks off in to structured groups. The teacher is free to interact with each of the groups and monitor progress, participation, and understanding.

Using Place Value

Resource Type: Problem-Solving Task

Each part of this task highlights a slightly different aspect of place value as it relates to decimal notation. More than simply being comfortable with decimal notation, the point is for students to be able to move fluidly between and among the different ways that a single value can be represented and to understand the relative size of the numbers in each place.

Compare Decimals

Resource Type: MFAS Formative Assessment

Students are asked to compare four pairs of decimals using the *less than*, *greater than*, or *equal to* symbols.

Measurement and Data

MAFS.4.MD.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.

MAFS.4.MD.1.1

DOK Level 1: Recall

Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; hr, min, sec. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. *For example, know that 1 ft. is 12 times as long as 1 in. Express the length of a 4 ft. snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24)…*

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Resources:

U.S. Customary Units: Weight
Resource Type: Tutorial
This Khan Academy tutorial video presents conventional examples that use specific customary units

How to Convert Kilograms to Milligrams
Resource Type: Tutorial
In this tutorial video from Khan Academy, explore the differences and similarities involved when converting between measurements in the metric and customary systems.

Let's Think in Small Units
Resource Type: Lesson Plan
In this lesson students will make and complete tables to express measurements in a larger unit in terms of a smaller unit within one system of units. They will use the chart to make real-world comparisons and explain their reasoning.

Conversions in the Customary System
Resource Type: MFAS Formative Assessment
Students complete two tables by converting from feet to inches and pounds to ounces.

Relative Sizes of Measurement Units for Length
Resource Type: MFAS Formative Assessment
Students are asked to name objects or distances whose lengths are about one meter, one foot, one centimeter, one yard, one kilometer, and one inch.

MAFS.4.MD.1.2

DOK Level 2: Basic Application of Skills & Concepts

Use the four operations to solve word problems[1] involving distances, intervals of time, and money, including problems involving simple fractions or decimals[2]. Represent fractional quantities of distance and intervals of time using linear models. ([1]See glossary Table 1 and Table 2) ([2]Computational fluency with fractions and decimals is not the goal for students at this grade level.)

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Resources:

Time Word Problem: When to Leave to Get Home on Time
Resource Type: Tutorial
In this Khan Academy tutorial video Chris is told to be home by 6:15. You know the number of minutes it takes him to get home. What time should he leave?

Amazing Race-Elapsed Time
Resource Type: Lesson Plan
In this lesson, which focuses specifically on the elapsed time portion of the standard, students work in small groups in a "race" to solve real world problems involving time.

Kesha and Juan
Resource Type: MFAS Formative Assessment
Students are asked to solve a multi-step word problem that requires converting metric length units.

Shopping List
Resource Type: MFAS Formative Assessment
Students are asked to convert units of measure given with fractions and decimals using linear models.

MAFS.4.MD.1.3

DOK Level 2: Basic Application of Skills & Concepts

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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Resources:

Area and Perimeter Word Problem: Table Dimensions
Resource Type: Tutorial
This Khan Academy tutorial video presents a step-by-step solution for finding the length and width of a table when given its area and perimeter.

Comparing Areas and Perimeters of Rectangles
Resource Type: Tutorial
In this tutorial video from Khan Academy, explore the relationship between area and perimeter. For example, if you know that area and the length, can you find the perimeter?

New Puppy's Pen
Resource Type: Lesson Plan
The purpose of this lesson is to help students find the missing side's length for rectangular area problems, when the total area and one side's length is given. The use of square tiles, then graph paper and equations are used throughout the lesson.

It's All Around, But Covered Up
Resource Type: Lesson Plan
In this lesson, students explore perimeter and area in real world situations.

Applying Area and Perimeter
Resource Type: MFAS Formative Assessment
Students are asked to find the dimensions of rectangles by applying the formulas for area and perimeter.

Using Area and Perimeter
Resource Type: MFAS Formative Assessment
Students are asked to solve real world problems by applying the formulas for area and perimeter.

MAFS.4.MD.2 Represent and interpret data.

MAFS.4.MD.2.4

DOK Level 2: Basic Application of Skills & Concepts

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.*

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Resources:

One Leg Up

Resource Type: Lesson Plan

In this lesson the students will be using a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). They will be measuring different lengths of insects, recording the lengths, and then plotting the data on a line plot. From this data they will solve problems involving the addition and subtraction of fractions.

Race Cars Part One

Resource Type: MFAS Formative Assessment

Students are asked to use a given set of data to create a line plot with an appropriate scale.

Race Cars Part Two

Resource Type: MFAS Formative Assessment

Students are asked to analyze data presented in a line plot and solve problems related to the data.

MAFS.4.MD.3 Geometric measurement: understand concepts of angle and measure angles.

MAFS.4.MD.3.5

DOK Level 1: Recall

Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:

a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.
b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.

Also Assesses: **MAFS.4.MD.3.6** Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.

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Resources:

Angle Basics
Resource Type: Tutorial
This Khan Academy tutorial video presents how an angle is formed and labeled.

Angle Measurements and Circle Arcs
Resource Type: Tutorial
This Khan Academy tutorial video demonstrates the relationship between the measurement of an angle and the arc of a circle.

Angles All Around Us
Resource Type: Lesson Plan
This is a lesson that introduces right, acute and obtuse angles in a fun and challenging way.

Angle Your Way Around
Resource Type: Lesson Plan
In this lesson students will be introduced to the protractor and benchmark angles, practice reading angles properly, measure angles precisely, and participate in a small group activity.

Determining an Angle's Measure
Resource Type: MFAS Formative Assessment
Students are asked to analyze two angles and explain how their measures are determined.

Measuring Angles with a Protractor
Resource Type: MFAS Formative Assessment
Students are asked to use a protractor to determine the measure of four angles.

MAFS.4.MD.3.7

DOK Level 2: Basic Application of Skills & Concepts

Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.

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Resources:

Solving for a Part of a Decomposed Angle
Resource Type: Tutorial
This Khan Academy tutorial video presents the strategy for finding the measure of one of two adjacent angles, when the sum of both and measure of one are known.

What's Your Angle?
Resource Type: Lesson Plan
In this lesson, students will use addition or subtraction to find the measure of two adjacent angles and determine the measure of an unknown angle.

Turns on a Skateboard
Resource Type: MFAS Formative Assessment
Students are asked to determine an unknown angle measure that is one component of a larger known angle when given the other component.

Geometry

MAFS.4.G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles.

MAFS.4.G.1.1

DOK Level 1: Recall

Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
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Resources:

The Geometry Super Heroes Save Mathopolis
Resource Type: Original Tutorial
Join Parallel Man and Perpendicular Man as they help Mayor Mathematics save Mathopolis by identifying parallel lines and line segments, as well as perpendicular lines and line segments in two-dimensional figures.

Geometric Map Makers
Resource Type: Lesson Plan
In this lesson, students will draw a point, line, line segment, ray, angle (right, obtuse, acute), perpendicular lines and parallel lines and identify these in two-dimensional figures. After practicing with these terms, students will create a map including a representation of each of the terms.

Lines, Rays, and Line Segments
Resource Type: MFAS Formative Assessment
Students are asked to draw parallel lines, perpendicular lines, a point, and a line segment. Students also explain how a line segment is different from a ray or line.

MAFS.4.G.1.2

DOK Level 2: Basic Application of Skills & Concepts

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.
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Resources:

These are the Right Triangles
Resource Type: Original Tutorial
In this tutorial, students will identify right triangles and explain the properties shared by all right triangles.

Categorizing Geometric Shapes: Practice Example
Resource Type: Tutorial
This Khan Academy tutorial video presents examples and explanations for categorizations of perpendicular sides and right, obtuse, and acute triangles.

Grouping Triangles
Resource Type: MFAS Formative Assessment
Students are shown three triangles that fit a rule (each has a right angle) and are asked to determine which of three other triangles also fit the rule.

Sketching Quadrilaterals
Resource Type: MFAS Formative Assessment
Students are asked to use shape descriptions to sketch shapes and explain why some cannot be sketched.

MAFS.4.G.1.3

DOK Level 2: Basic Application of Skills & Concepts

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.
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Resources:

The Symmetry Sisters Save the Day
Resource Type: Original Tutorial
Help the Symmetry Sisters save the City of Symmetry Line and the State of Arithmetic from the Radical Rat!

ABC Symmetry
Resource Type: Lesson Plan
Students will explore the concept of line symmetry in this lesson. Students will explore two-dimensional pictures and decide whether or not each image has symmetry.

Line Symmetry
Resource Type: MFAS Formative Assessment
Students are asked to identify line-symmetric figures and then draw the lines of symmetry.

4th Grade Mathematics Resources

Course Descriptions, Standards, Teacher, Student and Parent Resources

- 4th Grade Mathematics Course Description
- Standards Coding Scheme
- 4th Grade Mathematics Parent Guide
- 4th Grade Mathematics Student Resources

Assessment Assistance

- FSA Portal
- Test Item Specifications
- Test Design Summary and Blueprint
- Achievement Levels and Descriptions
- Understanding FSA Reports
- FSA Fact Sheet for English Language Arts and Mathematics
- Calculator and Reference Sheet Policies
- Reference Sheets

Instructional Resources

- Elementary Mathematics Resources
- Elementary Standards Progressions
- Literacy for Learning in the Content Areas
- English Language Learners Assistance
- Khan Academy 4th Grade Math Mission