

Grade 3 Mathematics

Full Syllabus

Illustrative Mathematics® K-5 Math (v.360)

8 Units • Unit Goals • Section Goals • Lesson-by-Lesson Outline

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Course Overview

Grade 3 of the Illustrative Mathematics K-5 curriculum is organized into 8 units. Students are introduced to multiplication and division, build conceptual understanding of area, extend addition and subtraction within 1,000, work with fractions as numbers on the number line, measure time/length/weight/volume, reason about two-dimensional shapes and perimeter, and culminate with a Putting It All Together unit.

The unit sequence is:

- Unit 1: Introducing Multiplication
- Unit 2: Area and Multiplication
- Unit 3: Wrapping Up Addition and Subtraction within 1,000
- Unit 4: Relating Multiplication to Division
- Unit 5: Fractions as Numbers
- Unit 6: Measuring Length, Time, Liquid Volume, and Weight
- Unit 7: Two-Dimensional Shapes and Perimeter
- Unit 8: Putting It All Together

Each unit is divided into lettered sections (A, B, C, D as applicable), and each section is a sequence of daily lessons. Optional lessons (often “Center Days” or extension activities) are noted.

Unit 1: Introducing Multiplication

Unit Goal

Students represent and solve multiplication problems through the context of scaled picture and bar graphs and equal-group situations.

Unit Narrative

In this unit, students interpret and represent data on scaled picture graphs and scaled bar graphs. Then they learn the concept of multiplication. This is the first of four units that focus on multiplication. In grade 2, students analyzed picture graphs in which one picture represented one object and bar graphs that were scaled by single units. Here, students encounter picture graphs in which each picture represents more than one object and bar graphs that are scaled by 2, 5, or 10 units. Students learn that multiplication can mean finding the total number of objects in groups of equal size, and can be represented by a multiplication expression. They then relate the idea of equal groups to the rows and columns of an array. In working with arrays, students begin to notice the commutative property of multiplication. Later, students see situations in which the total number of objects is known but either the number of groups or the size of each group is not known. Problems with a missing factor offer students a preview to division.

Section A: Interpret and Represent Data in Scaled Graphs

Section Goals

- Interpret scaled picture and bar graphs.
- Represent data using scaled picture and bar graphs.
- Solve one- and two-step story problems using addition and subtraction.

Section Narrative

In this section, students interpret and draw scaled picture graphs and scaled bar graphs to represent data. This builds on their grade 2 experiences with data representation and with skip-counting by 2, 5, and 10. Students see that each picture in a picture graph and each line or increment in a bar graph can represent more than one object. They work with familiar number scales of 2, 5, and 10. Students use the information in scaled bar graphs to solve one- and two-step “how many more?” and “how many fewer?” problems within 100.

Lessons

1. **Make Sense of Data** — Let’s read and ask questions about data.
2. **Represent Data and Solve Problems** — Let’s create graphs and answer questions.
3. **Scaled Picture Graphs** — Let’s explore scaled picture graphs.
4. **Create Scaled Picture Graphs** — Let’s make a scaled picture graph.
5. **Represent Data in Scaled Bar Graphs** — Let’s make a scaled bar graph.
6. **Choose a Scale** — Let’s choose a scale for our bar graph.
7. **Answer Questions about Scaled Bar Graphs** — Let’s solve problems based on data represented in bar graphs.
8. **More Questions about Scaled Bar Graphs** — Let’s solve problems using data shown on bar graphs.

Section B: From Graphs to Multiplication

Section Goals

- Represent and solve multiplication problems involving equal groups.
- Understand multiplication in terms of equal groups.

Section Narrative

In this section, students make sense of multiplication in terms of equal groups of objects. They use discrete drawings and tape diagrams that show equal groups to represent multiplication. Students relate these representations to expressions and interpret them in terms of "___ groups of ___." At the end of the section, students write equations to represent multiplication situations and find unknown products or factors. In reasoning about the latter, students begin to make sense of the relationship between multiplication and division, without formally using the language of division.

Lessons

1. **Multiplication for Equal Groups** — Let's work with equal groups of things.
2. **Situations, Drawings, and Diagrams, Oh My!** — Let's represent equal groups.
3. **Multiplication Expressions** — Let's write multiplication expressions.
4. **Represent and Solve Multiplication Problems** — Let's represent and solve problems involving equal groups.
5. **Multiplication Equations** — Let's learn about multiplication equations.
6. **Write and Solve Equations with Unknowns** — Let's work with equations with unknown numbers.
7. **More Factors, More Problems** — Let's solve more multiplication problems.

Section C: Represent Multiplication with Arrays and the Commutative Property

Section Goals

- Represent and solve multiplication problems involving arrays.

Section Narrative

In this section, students relate the idea of equal groups to the structure of an array, a representation introduced in grade 2. Students see that the rows and columns of an array represent equal groups. The number of rows (or columns), the number of items in each row (or column), and the total number of objects in an array can therefore be represented with a multiplication equation. As students reason about arrays, they also notice that multiplication is commutative.

Lessons

1. **Arrange Objects into Arrays** — Let's make some arrays.
2. **Match and Draw Arrays** — Let's match arrays to equal groups and draw arrays.
3. **Represent Arrays with Expressions** — Let's represent situations with arrays and expressions.
4. **Solve Problems Involving Arrays** — Let's solve problems involving arrays.
5. **The Commutative Property** — Let's learn about the commutative property.
6. **Game Night Seating Plan (Optional)** — Let's plan a game night.

Unit 2: Area and Multiplication

Unit Goal

Students learn about area concepts and relate area to multiplication and to addition.

Unit Narrative

In this unit, students encounter the concept of area, relate the area of a rectangle to multiplication, and solve problems involving area. In grade 2, students explored attributes of shapes and measured side lengths. In this unit, students make sense of another attribute of shapes: a measure of how much space a shape covers. They begin informally, comparing two shapes and deciding which covers more space, then compare more precisely by tiling shapes with pattern blocks and square tiles. Students learn that area is the number of square units that cover a figure without gaps or overlaps. Students focus on the area of a rectangle, noticing that a tiled rectangle forms an array. They learn standard units of area (square inch, square centimeter, square foot, square meter) and solve real-world problems. Later, students find the area and unknown side lengths of figures composed of non-overlapping rectangles, laying the groundwork for the distributive property.

Section A: Concepts of Area Measurement

Section Goals

- Describe “area” as the number of unit squares that cover a plane figure, without gaps and overlaps.
- Measure the area of a rectangle by counting unit squares.

Section Narrative

Students reason about area as an attribute of two-dimensional shapes and develop a sense of area as the amount of space covered by a shape. They consider how to show or explain a shape as being larger or smaller than another, then see that they can quantify the size of shapes more precisely by covering them with smaller, equal-size square units, such as pattern blocks or square tiles. Students learn that the area of a shape is the number of squares that covers it, with no gaps or overlaps.

Lessons

1. **What Is Area?** — Let’s compare the sizes of shapes.
2. **How Do We Measure Area?** — Let’s use square tiles to measure area.
3. **Tile Rectangles** — Let’s count square tiles.
4. **Area of a Rectangle** — Let’s find the areas of more rectangles.

Section B: Relate Area to Multiplication

Section Goals

- Explain why the area of a rectangle can be determined by multiplying the side lengths.
- Solve problems involving the area of a rectangle.

Section Narrative

Students relate the areas of rectangles to multiplication expressions. They see equal-size groups in rectangles that are tiled with squares and learn to express the area of a rectangle as a product of two measurements. Students transition from gridded rectangles to rectangles showing only side lengths,

moving from concrete (counting) to abstract (finding product of two measurements). Students also learn about standard units of area in inches, feet, centimeters, and meters.

Lessons

1. **Represent Products as Areas** — Let's connect multiplication expressions to areas.
2. **Different Square Units (Part 1)** — Let's learn about different units we can use to measure area.
3. **Different Square Units (Part 2)** — Let's learn about larger square units.
4. **Area of a Rectangle without a Grid** — Let's solve area problems, without a grid.
5. **Measure to Find the Area** — Let's measure the sides of rectangles and find the areas.
6. **Solve Area Problems** — Let's solve area problems.
7. **Area and the Multiplication Table** — Let's explore area and the multiplication table.

Section C: Find the Area of a Figure Composed of Rectangles

Section Goals

- Find the areas of figures composed of rectangles.

Section Narrative

Students encounter figures composed of non-overlapping rectangles and find their area. They see increasingly abstract diagrams, starting with figures that are fully gridded, moving to those with a partial grid, and ending with figures showing only side lengths and no grid. The progression encourages students to decompose the figures and use multiplication. Students also use their understanding of rectangles (opposite sides are equal) to find unknown side lengths.

Lessons

1. **Area and Addition** — Let's find the area of a figure made up of rectangles.
2. **Find the Area of a Figure** — Let's find the area of a figure.
3. **Find the Area of a Figure with Unknown Side Lengths** — Let's find the area of a figure with unknown side lengths.
4. **New Room (Optional)** — Let's fit furniture into a room.

Unit 3: Wrapping Up Addition and Subtraction within 1,000

Unit Goal

Students use place-value understanding to round whole numbers and add and subtract within 1,000. They also represent and solve two-step word problems, using addition, subtraction, and multiplication, and assess the reasonableness of answers.

Unit Narrative

In this unit, students work toward the goal of fluently adding and subtracting within 1,000. They use mental math strategies developed in grade 2, and learn algorithms based on place value. Students learn a few different algorithms that work with any numbers and are generalizable to greater numbers and decimals, starting with algorithms that show expanded form and moving toward more streamlined ones close to the standard algorithm. Understanding of place value comes into play as students round numbers to the nearest multiples of 10 and 100, and use rounding to estimate answers to two-step problems and determine if answers are reasonable.

Section A: Add within 1,000

Section Goals

- Fluently add within 1,000, using algorithms based on place value and properties of operations.
- Use place value understanding to compose and decompose numbers.

Section Narrative

Students begin by revisiting place value, reasoning about different ways to decompose numbers within 1,000, and using familiar strategies. From there, they progress toward more abstract addition strategies based on place value. To support this, students use base-ten blocks or diagrams, express numbers in expanded form, and rely on their understanding of properties of operations.

Lessons

1. **Represent Numbers in Different Ways** — Let's represent numbers in different ways.
2. **Addition and Subtraction Situations** — Let's solve problems involving addition and subtraction.
3. **Add Your Way** — Let's add numbers within 1,000.
4. **Introduction to Addition Algorithms** — Let's learn new ways to add.
5. **Another Addition Algorithm** — Let's learn another algorithm to add.
6. **Use Strategies and Algorithms to Add** — Let's consider when to use algorithms and when to use other strategies to add.

Section B: Subtract within 1,000

Section Goals

- Fluently subtract within 1,000, using algorithms based on place value, properties of operations, and the relationship between addition and subtraction.

Section Narrative

Students analyze and use subtraction algorithms. They begin by using base-ten blocks and diagrams to subtract numbers. As is the case with addition, students first make sense of a subtraction algorithm that uses expanded form, which allows them to see how the hundreds and the tens are decomposed into

smaller units. This unconventional notation allows students to see the meaning behind the digits above the numbers in the standard algorithm.

Lessons

1. **Subtract Your Way** — Let's subtract numbers within 1,000.
2. **Subtraction Algorithms (Part 1)** — Let's learn a new way to subtract.
3. **Subtraction Algorithms (Part 2)** — Let's learn more about our first subtraction algorithm.
4. **Subtraction Algorithms (Part 3)** — Let's learn another algorithm to subtract.
5. **Analyze Subtraction Algorithms** — Let's think about subtraction algorithms in more detail.
6. **Subtract Strategically** — Let's consider when to use algorithms and when to use other strategies to subtract.

Section C: Round within 1,000

Section Goals

- Round whole numbers to the nearest multiple of 10 and nearest multiple of 100.

Section Narrative

Students learn the conventions of rounding whole numbers to the nearest multiple of 10 or multiple of 100. This work relies on and reinforces their understanding of place value. Number-line diagrams help students think about the multiple of 10 or multiple of 100 to which a given number is closest. Students explore how rounding can change the estimate of a sum.

Lessons

1. **Multiples of 100** — Let's explore multiples of 100 and how other numbers relate to them.
2. **Nearest Multiples of 10 and of 100** — For a given number, let's find the closest multiple of 100 and the closest multiple of 10.
3. **Round to the Nearest Ten and the Nearest Hundred** — Let's round to the nearest ten and the nearest hundred.
4. **Round and Round Again** — Let's look for patterns in rounding.

Section D: Solve Two-Step Problems

Section Goals

- Assess the reasonableness of answers.
- Solve two-step word problems, using addition, subtraction, and multiplication.

Section Narrative

Students encounter more complex problems, think about the reasonableness of their answers, and use rounding to make estimates. They analyze tape diagrams that could represent the relationships in given situations and write corresponding equations using letters to stand for unknown numbers. Students apply what they've learned about adding and subtracting within 1,000 to solve two-step word problems that involve multiplication, addition, and subtraction.

Lessons

1. **Does It Make Sense?** — Let's decide if our answers make sense.
2. **Diagrams and Equations for Word Problems** — Let's connect diagrams and equations to situations.

3. **Situations and Equations** — Let's represent and solve problems.
4. **More Practice to Represent and Solve** — Let's represent and solve more problems.
5. **Classroom Supplies (Optional)** — Let's make a wish list.

Unit 4: Relating Multiplication to Division

Unit Goal

Students learn about and use the relationship between multiplication and division, place value understanding, and the properties of operations to multiply and divide whole numbers within 100. They also represent and solve two-step word problems using the four operations.

Unit Narrative

This unit introduces students to the concept of division and its relationship to multiplication. Students make sense of division in terms of equal-size groups, seeing that dividing can mean finding the size of each group, or finding the number of equal groups. Students use the relationship between multiplication and division to develop fluency with single-digit multiplication and division facts. They reason about products by decomposing one of the factors and applying properties of operations. Students multiply numbers greater than 10 and decompose two-digit factors into tens and ones. Toward the end of the unit, students solve two-step problems that involve all four operations, including expressions that use parentheses.

Section A: What Is Division?

Section Goals

- Represent and solve “how many groups?” and “how many in each group?” problems.

Section Narrative

Students encounter situations involving the questions “how many in each group?” and “how many groups?” They make sense of division in terms of finding the answers to these questions. Students see that the same diagram or expression can represent different questions. Later, students generalize their observations about division situations and interpret division expressions without a context.

Lessons

1. **How Many Groups?** — Let’s represent and solve problems.
2. **How Many in Each Group?** — Let’s represent and solve more problems.
3. **Division Situation Drawings** — Let’s represent division situations with drawings.
4. **Interpret Division Expressions** — Let’s make sense of division expressions.
5. **Write Division Expressions** — Let’s write division expressions and solve “how many groups?” and “how many in each group?” problems.

Section B: Relate Multiplication and Division

Section Goals

- Understand division as an unknown-factor problem.
- Use properties of operations to develop fluency with single-digit multiplication facts, and their related division facts.

Section Narrative

Students explicitly relate division to the unknown factor in a multiplication equation. They use this insight and their knowledge of multiplication facts to identify division facts. To develop fluency, students reason about patterns in a multiplication table and notice that multiplication is commutative. Students

also reason about products by decomposing one of the factors. This line of reasoning develops students' intuition for the distributive property of multiplication.

Lessons

1. **Division as an Unknown Factor** — Let's connect division equations to multiplication equations.
2. **Relate Multiplication and Division** — Let's make more connections between multiplication and division.
3. **Relate Quotients to Familiar Products** — Let's consider the products and quotients we know right away or can find quickly.
4. **Patterns in the Multiplication Table** — Let's find patterns in the multiplication table and use them to multiply.
5. **Explore Multiplication Strategies with Rectangles** — Let's use rectangles to explore multiplication strategies.
6. **Multiplication Strategies on Ungridded Rectangles** — Let's use different strategies to find the area of ungridded rectangles.

Section C: Multiplying Greater Numbers

Section Goals

- Use properties of operations and place-value understanding to develop strategies to multiply within 100 and to multiply one-digit numbers by a multiple of 10.

Section Narrative

Students use various strategies based on place value and properties of operations to multiply greater numbers. They first multiply one-digit numbers and multiples of 10 and observe the associative property. These insights enable students to multiply other one- and two-digit factors and find products within 100. The representations used here (base-ten diagrams, gridded rectangles, and ungridded area diagrams) encourage students to use place-value understanding and decompose two-digit factors into tens and ones.

Lessons

1. **Multiply Multiples of 10** — Let's multiply 1-digit numbers by multiples of 10.
2. **Solve Problems with Equal Groups** — Let's multiply some teen numbers.
3. **Ways to Represent Multiplication of Teen Numbers** — Let's make sense of some ways to represent the multiplication of teen numbers.
4. **Equal Groups, Greater Numbers** — Let's solve some problems with equal groups that have greater numbers.
5. **Multiply Numbers Greater than 20** — Let's multiply numbers that are greater than 20.
6. **Use the 4 Operations to Solve Problems** — Let's use the four operations to solve problems.

Section D: Dividing Greater Numbers

Section Goals

- Use properties of operations, place-value understanding, and the relationship between multiplication and division to divide within 100.

Section Narrative

Students perform division in which the quotient or divisor is greater than 10. They apply what they know about place value, the two interpretations of division, and the relationship between multiplication and division to divide greater numbers. Students use the relationship between multiplication and division and place-value understanding to find quotients.

Lessons

1. **Greater Numbers in Equal Groups** — Let's divide with greater numbers.
2. **Ways to Divide Greater Numbers** — Let's make sense of representations of division.
3. **Strategies for Dividing** — Let's use different strategies to divide.
4. **Solve Problems Using the Four Operations** — Let's represent and solve problems using all 4 operations.
5. **School Community Garden (Optional)** — Let's plan a school garden.

Unit 5: Fractions as Numbers

Unit Goal

Students develop an understanding of fractions as numbers and of fraction equivalence, by representing fractions on diagrams and number lines, generating equivalent fractions, and comparing fractions.

Unit Narrative

In this unit, students make sense of fractions as numbers. The denominators of the fractions explored here are limited to 2, 3, 4, 6, and 8. Students reason about the sizes of shaded parts in shapes, create fraction strips by folding paper, and represent the strips as tape diagrams. Then they move to number lines, identifying 1 whole and reasoning about the size of parts. Students learn about equivalent fractions (fractions that are the same size or at the same location on the number line) and that some fractions are the same size as whole numbers. Students compare fractions with the same denominator and those with the same numerator.

Section A: Introduction to Fractions

Section Goals

- Understand that fractions are built from unit fractions, such that a fraction is the quantity formed by parts of a given size.
- Understand that unit fractions are formed by partitioning shapes into equal parts.

Section Narrative

Students use shaded diagrams and fraction strips to learn about fractions, building on prior knowledge of halves, thirds, and fourths. Students partition rectangles into 6 or 8 equal parts and describe each part. They learn the notation for a unit fraction, the size of each part if the whole is partitioned into equal parts. Working with fraction strips allows students to see non-unit fractions as being composed of unit fractions.

Lessons

1. **Name the Parts** — Let's name parts of a whole.
2. **Name Parts as Fractions** — Let's use fractions to describe parts.
3. **Non-unit Fractions** — Let's learn about non-unit fractions.
4. **Build Fractions from Unit Fractions** — Let's build other fractions from unit fractions.

Section B: Fractions on the Number Line

Section Goals

- Understand a fraction as a number, and represent fractions on the number line.

Section Narrative

Students reason about fractions on the number line. This work relies on locating whole numbers on the number line, and partitioning a whole into equal parts. Students partition the interval between 0 and 1 into equal parts. They mark the first tick mark with a unit fraction and locate non-unit fractions by counting lengths. The terms “numerator” and “denominator” are introduced here.

Lessons

1. **To the Number Line** — Let's learn about fractions on the number line.

2. **Locate Unit Fractions on the Number Line** — Let's partition the number line to locate unit fractions.
3. **Non-unit Fractions on the Number Line** — Let's locate non-unit fractions on the number line.
4. **Fractions and Whole Numbers** — Let's work with fractions and whole numbers on the number line.
5. **All Kinds of Numbers on the Number Line** — Let's locate numbers on the number line when we are given the location of 1 fraction.

Section C: Equivalent Fractions

Section Goals

- Explain equivalence of fractions in special cases, and express whole numbers as fractions and fractions as whole numbers.

Section Narrative

Students learn that equivalent fractions are fractions that are the same size. They first identify equivalent fractions by noticing parts of equal length on fraction strips and tape diagrams. They learn equivalent fractions are at the same distance from 0 and the same point on the number line. They write equations to express equivalence, including for fractions that are equivalent to whole numbers.

Lessons

1. **Equivalent Fractions** — Let's identify equivalent fractions.
2. **Generate Equivalent Fractions** — Let's generate equivalent fractions.
3. **Equivalent Fractions on a Number Line** — Let's find fractions at the same location.
4. **Whole Numbers and Fractions** — Let's find fractions and whole numbers that are equivalent.

Section D: Fraction Comparisons

Section Goals

- Compare two fractions with the same numerator or denominator, record the results with the symbols $>$, $<$, or $=$, and justify the conclusions.

Section Narrative

Students compare fractions, learning that comparisons are valid only if the fractions refer to the same whole. They begin by deciding if two fractions are equivalent. Students compare fractions with the same denominator (looking at numerators) and fractions with the same numerator (looking at denominators). They reinforce the idea that as the denominator increases, the size of each part gets smaller.

Lessons

1. **How Do You Compare Fractions?** — Let's represent and compare fractions.
2. **Compare Fractions with the Same Denominator** — Let's compare 2 fractions with the same denominator.
3. **Compare Fractions with the Same Numerator** — Let's compare 2 fractions with the same numerator.
4. **Compare Fractions** — Let's compare more fractions in different situations.
5. **Plan a Fun Run (Optional)** — Let's use what we know about fractions to plan a 3-mile fun run.

Unit 6: Measuring Length, Time, Liquid Volume, and Weight

Unit Goal

Students generate and represent length measurement data in halves and fourths of an inch on line plots. They learn about and estimate relative units of measure, including weight, liquid volume, and time, and use the four operations to solve problems involving measurement.

Unit Narrative

In this unit, students measure length, weight, liquid volume, and time. They begin with length measurement, building on their work with fractions to explore measurements in halves and fourths of an inch. They use rulers to collect measurements and display the data on line plots, learning about mixed numbers and equivalent fractions along the way. Students learn standard units for weight (kilograms and grams) and liquid volume (liters). To gain familiarity with liters, students measure container volume and estimate the volume of everyday containers. Students measure time to the minute, using the relationship between the hour and minute hands. In the final section, students solve problems related to all three measurements.

Section A: Measurement Data on Line Plots

Section Goals

- Measure lengths using rulers marked with halves and fourths of an inch to generate data for making a line plot.

Section Narrative

Students learn to measure lengths in fractions of an inch—first in halves and then in fourths. They partition rulers with whole-number inch marks into equal intervals and measure objects in the classroom. Students learn that measurements greater than 1 can be expressed with mixed numbers. They revisit equivalent fractions and use number lines, rulers, and line plots, which share the same structure.

Lessons

1. **Measure in Halves of an Inch** — Let's measure the length of objects around the room.
2. **Measure in Fourths of an Inch** — Let's measure lengths in quarters of an inch.
3. **Measure in Halves and Fourths of an Inch** — Let's measure lengths in halves of an inch and quarters of an inch.
4. **Interpret Measurement Data on Line Plots** — Let's make sense of line plots with lengths in half inches and quarter inches.
5. **Represent Measurement Data on Line Plots** — Let's collect measurement data and show them on a line plot.

Section B: Weight and Liquid Volume

Section Goals

- Measure and estimate weights and liquid volumes of objects.

Section Narrative

Students learn that weight is a measure of how heavy something is, with grams and kilograms as units. To establish benchmarks, students hold objects of different weights. Next, students learn that liquid

volume is the amount of space a liquid takes up, with liters as the unit. Students gain concrete experience by filling a large container in 1-liter increments and estimate volumes of everyday objects. Later, students read scales on liquid measurement tools.

Lessons

1. **Estimate and Measure Weight** — Let's measure and estimate weight.
2. **Introduction to Liquid Volume** — Let's learn about the volume of liquids and containers.
3. **Estimate and Measure Liquid Volume** — Let's measure and estimate the volume of liquids and containers.

Section C: Problems Involving Time

Section Goals

- Solve problems involving addition and subtraction of time intervals in minutes.
- Tell time to the minute.

Section Narrative

Students learn to tell and write time to the nearest minute and show times on analog clocks. They solve elapsed time problems with unknown start times, durations, or end times, using representations such as tables, words, equations, or marks on a clock. Students build fluency with addition, subtraction, and multiplication of multiples of 5, 10, and 15.

Lessons

1. **Time to the Nearest Minute** — Let's tell and write time to the nearest minute.
2. **Solve Problems Involving Time (Part 1)** — Let's solve problems involving time.
3. **Solve Problems Involving Time (Part 2)** — Let's solve more problems involving time.

Section D: Measurement Problems in Context

Section Goals

- Solve problems involving the four operations and measurement contexts.

Section Narrative

Students solve problems involving measurements of weight, liquid volume, and time in the context of a state or county fair. The problems prompt students to use all four operations: addition and subtraction within 1,000 and multiplication and division within 100. In Information Gap routines, students consider what information might be needed to answer questions.

Lessons

1. **Ways to Represent Measurement Situations** — Let's make sense of and represent measurement situations at the fair.
2. **Problems with Missing Information** — Let's find out what information is needed to solve problems about measurements at the fair.
3. **What Makes Sense in the Problem?** — Let's think about what numbers and questions make sense in problems.
4. **Ways to Solve Problems and Show Solutions** — Let's solve problems about spending a day at the fair and think about how to best show our solutions.
5. **Design a Game (Optional)** — Let's design a game.

Unit 7: Two-Dimensional Shapes and Perimeter

Unit Goal

Students reason about shapes and their attributes, with a focus on quadrilaterals. They solve problems involving the perimeter and area of shapes.

Unit Narrative

In this unit, students reason about attributes of two-dimensional shapes and learn about perimeter. Students continue to develop language to describe and categorize shapes, learning to classify quadrilaterals and triangles into subcategories. Students learn the meaning of perimeter and find the perimeter of shapes, considering geometric attributes that help them. They distinguish perimeter from area—perimeter measures length in length units; area measures space in square units. Students apply geometric understanding to design a park, a West African wax print pattern, and solve real-world problems.

Section A: Reason with Shapes

Section Goals

- Reason about shapes and their attributes.

Section Narrative

Students describe, compare, and sort a variety of shapes. They think about ways to further categorize triangles and quadrilaterals based on sides (whether some are of equal length) and angles (whether one or more right angles are present). Students learn to distinguish right triangles and to describe defining attributes of squares and rectangles. They see that a shape can have more than one name if it has attributes that define it as a different type of shape.

Lessons

1. **What Attributes Do You See?** — Let's sort shapes into groups.
2. **Attributes of Triangles and Quadrilaterals** — Let's sort shapes into more specific categories.
3. **Attributes that Define Shapes** — Let's play Mystery Quadrilateral.
4. **Attributes of Rectangles, Rhombuses, and Squares** — Let's find out what makes rectangles, rhombuses, and squares what they are.
5. **Attributes of Other Quadrilaterals** — Let's describe and draw shapes in specific groups.

Section B: What Is Perimeter?

Section Goals

- Find the perimeter of two-dimensional shapes, including when all or some side lengths are given.

Section Narrative

Students are introduced to the idea of perimeter as a measurable geometric attribute. They use paper clips to build the boundary of shapes and use the length of a paper clip as the unit. Students transition to analyzing shapes with equal-size intervals marked on their sides or drawn on dot/grid paper. They learn to leverage geometric attributes (recognizing equal sides, using multiplication) to find perimeter more efficiently.

Lessons

1. **Distance around Shapes** — Let's find the distance around shapes.
2. **Same Perimeter, Different Shapes** — Let's learn about shapes with the same perimeter.
3. **Find the Perimeter** — Let's find the perimeter of more shapes.
4. **Perimeter Problems** — Let's solve problems about perimeter.

Section C: Expanding on Perimeter

Section Goals

- Solve problems involving perimeter and area, in and out of context.

Section Narrative

Students analyze the area and perimeter of shapes by solving contextual problems that require considering both measurements. They draw rectangles with the same perimeter and different areas, and rectangles with the same area and different perimeters. Students recognize that given the perimeter (or area) of a rectangle, they can find rectangles with different whole-number areas (or perimeters).

Lessons

1. **Problem Solving with Perimeter and Area** — Let's solve problems involving perimeter and area.
2. **Rectangles with the Same Perimeter** — Let's explore rectangles with the same perimeter.
3. **Rectangles with the Same Area** — Let's explore rectangles with the same area.

Section D: Design with Perimeter and Area

Section Goals

- Apply geometric understanding to solve problems.

Section Narrative

Students apply what they've learned about shapes, geometric attributes, perimeter, and area to solve problems and create designs in different contexts. They design a small park, examine geometric features in West African wax print patterns, and design a space to keep chickens. Throughout, students draw on dot paper and use the intervals between dots as a unit of measurement.

Lessons

1. **Shapes and Play** — Let's design a park.
2. **Wax Prints** — Let's analyze and make wax prints.
3. **A Space for Chickens (Optional)** — Let's plan a space to keep chickens.

Unit 8: Putting It All Together

Unit Goal

Students consolidate and solidify their understanding of various concepts and skills related to major work of the grade. They also continue to work toward fluency goals of the grade.

Unit Narrative

In this unit, students revisit major work and fluency goals of the grade. In Section A, students reinforce what they learned about fractions, their sizes, and their locations on the number line. In Section B, they deepen their understanding of perimeter, area, and scaled graphs by solving problems about measurement and data—including designing a tiny house. Section C lets students work toward multiplication and division fluency through games. In Section D, students review major work by creating activities in the format of the Warm-up routines. Sections are standalone and not required to be completed in order.

Section A: Fraction Fun

Section Goals

- Understand a fraction as a number, and represent fractions on the number line.

Section Narrative

Students revisit and build on important fraction ideas. They think about different ways to represent a fraction and to estimate the size of a fraction presented in different forms: as an area diagram, a shaded strip, and a number line. Students practice identifying and locating fractions on the number line. They consolidate understanding by analyzing general statements about fractions and revising their thinking through discussion.

Lessons

1. **Estimation Explorations with Fractions** — Let's explore estimations with fractions.
2. **Create Your Own Number Line** — Let's create number lines and compare fractions.
3. **Fractions Round Table** — Let's discuss fractions.

Section B: Measurement and Data

Section Goals

- Apply concepts of measurement and data to solve problems.

Section Narrative

Students investigate ideas on measurement (area and perimeter) and data (scaled graphs). They use shapes, perimeter, and area to design a tiny house and write questions about the areas and perimeters of the shapes. Students apply addition and subtraction to calculate the cost of finishing a room. Then they conduct a survey, organize their data, and represent it with a scaled graph.

Lessons

1. **Tiny House: Design and Solve** — Let's design a tiny house.
2. **Tiny House: Cost** — Let's calculate the cost of finishing a room in a tiny house.
3. **Survey the Class, Survey the School** — Let's survey a large group.
4. **Graph and Answer** — Let's represent our data on scaled bar graphs and answer questions about the data.

Section C: Multiplication and Division Games

Section Goals

- Develop fluency with single-digit multiplication facts and their related division facts.

Section Narrative

Students build fluency with multiplication and division. They reflect on the products within 100 that they know from memory and those they don't know yet, then practice through games. Students reinforce understanding of connections between multiplication and division by matching equations and diagrams that represent the same quantities and relationships. They play games to improve facility with multiplication and division.

Lessons

1. **Multiplication Center Day** — Let's sort multiplication facts and play a multiplication game.
2. **Multiplication Game Day** — Let's play multiplication games.
3. **Multiplication and Division** — Let's represent equal groups and write situations with equal groups.
4. **Division Game Day** — Let's play division games.

Section D: Create and Design

Section Goals

- Review the major work of the grade by creating and designing instructional routines.

Section Narrative

Students apply the mathematics they have learned to design Warm-up activities that incorporate routines such as Notice and Wonder, How Many Do You See?, Estimation Exploration, and Number Talk. Each lesson is devoted to a particular routine. Students begin by completing partially created tasks and practice anticipating responses that others might give to the prompts they pose.

Lessons

1. **Notice and Wonder** — Let's create a "Notice and Wonder" routine.
2. **How Many Do You See?** — Let's create a "How Many Do You See?" routine.
3. **Estimation Exploration** — Let's create an "Estimation Exploration" routine.
4. **Number Talk** — Let's create a "Number Talk" routine.

About This Syllabus

This syllabus was compiled from the publicly available Illustrative Mathematics K-5 v.360 curriculum at accessim.org. Unit and section narratives, goals, and lesson titles are sourced from the teacher view.

Optional lessons (typically Center Days and culminating tasks) are labeled “(Optional).”

Assessments (checkpoints and end-of-unit assessments) are referenced in the source curriculum but require a Kendall Hunt educator account to view; they are not included here.

<https://accessim.org/k-5/grade-3?a=teacher>