

3rd Grade Math in Focus

Chapter 1: Numbers to 10,000

Key Learning Objectives

Counting to 10,000 and Place Value	Comparing and Ordering Numbers	Rounding Numbers to the Nearest Ten or Hundred
<p>In Sections 1 and 2, students learn how to use base-ten blocks to count to 10,000. Students also learn that each digit in a number has a specific value using place-value strips, and that numbers can be represented in several ways. They learn to write numbers in standard form, expanded form, and word form. Students also learn to count on and back by ones, tens, hundreds, and thousands using base-ten blocks and number lines.</p>	<p>In Section 3, students learn to use place value to compare up to three 4-digit numbers using a place-value chart. Students learn to record their comparisons using $<$ or $>$ symbols, and order numbers from least to greatest and greatest to least.</p>	<p>In Sections 4 and 5, students learn to round numbers to the nearest ten and hundred. Students begin rounding by thinking of what number it is closer to on a number line. Students then use a place-value chart to round using the specific place required.</p>

Chapter 2: Addition Within 10,000

Key Learning Objectives

Addition Patterns and Mental Math	Addition within 10,000 with and Without Regrouping	Real World Addition Problems
<p>In Sections 1 and 2, students use number bonds to practice mental math strategies to add 2-digit numbers quickly. Students use strategies such as making a five or a ten, and adding tens and subtracting the extra ones. This also serves as a quick way for students to practice their mental facts before moving onto more challenging addition problems. Students also look at the addition table to identify patterns and understand the properties of addition.</p>	<p>In Sections 3, 4, and 5, students learn to use base-ten blocks to add with and without regrouping in the ones, tens, and hundreds place. Students rely on their understanding of place value to add and use estimation to check.</p>	<p>In Section 6, students use bar models to solve one- and two-step real-world problems involving addition with and without regrouping and addition of money. Students will apply all their mental math and addition skills to work through more challenging problems.</p>

Chapter 3: Subtraction Within 10,000

Key Learning Objectives

Mental Subtraction	Subtraction with and Without Regrouping	Real World Subtraction Problems
<p>In Section 1, students will explore using number bonds to subtract mentally. They will learn specific strategies to help them subtract, such as subtract the tens, then subtract the ones; or subtract the tens, then add the extra ones. These skills will help students to build on their ability to subtract greater numbers later in the chapter.</p>	<p>In Sections 2, 3, and 4, students will subtract numbers with and without regrouping. In Section 2, students review the subtraction within 1,000 using the vertical algorithm. In Section 3, students use base-ten blocks and the vertical algorithm to subtract numbers within 10,000 without regrouping. In Section 4, students use base-ten blocks and the vertical algorithm to subtract numbers within 10,000 with regrouping. Students are encouraged to first look at each place and ask if there is enough before subtracting to aid in mental math. Students check their answers by rounding to the nearest hundred before subtracting, and by using addition.</p>	<p>In Section 5, students combine all their learning to apply their subtraction skills to one- and two-step real-world problems. Students will extend their knowledge to subtract money up to tens of dollars, and involving cents. Then, students will move on to solve problems that involve the use of both addition and subtraction. Students will draw bar models to help them understand and solve the problems.</p>

Chapter 4: Multiplication Tables

Key Learning Objectives

Multiplication Facts	Multiplication Patterns	Division Using Multiplication Facts
<p>In Sections 1 – 6, students use several methods to learn multiplication facts. Students learn skip counting, number lines, and known facts to learn the 6, 7, 8, and 9 facts. Students then use patterns and known facts to learn the 11 and 12 facts. Students are encouraged to rely on known facts to aid in memorization and understanding of multiplication facts.</p>	<p>Section 7 explores the multiplication table and helps students look for patterns. Students see that several facts can be doubled to find another fact.</p>	<p>Section 8 relates division to multiplication. Students learn two ways for division and use connecting cubes to demonstrate understanding. Students also solve division facts using known multiplication facts.</p>

Chapter 5: Multiplication

Key Learning Objectives

Multiplying Using Models	Multiplying with and Without Regrouping
In Section 1, students will use various models to show multiplication of 2-digit numbers by 1-digit numbers. Students begin by using concrete materials to create arrays and move to solving multiplication problems pictorially with area models in various arrangements. Both models help students to break down multiplication problems based on place value.	In Sections 2 and 3, students use base-ten blocks to model and make sense of the standard algorithm of multiplication for 2-digit numbers by 1-digit numbers with and without regrouping. Students apply the distributive property to break down multiplication problems into expanded form to make sense of the algorithm in terms of place value. Students also learn to use area models as an alternative method of multiplying using visual models.

Chapter 6: Using Bar Models: The Four Operations

Key Learning Objectives

Real World Problems: Multiplication	Real World Problems: Division	Real World Problems: Four Operations
In Section 1, students will explore different ways to express multiplication using a bar model to solve a real-world problem. Students will explore the language of “two times as many” and how that can be expressed in a model. They will show their thinking by writing an algebraic sentence.	In Section 2, students will explore the different ways to solve a division real-world problem. Students will find how many are in each group and solve for a single unit. They will also use the equal groups to find how many groups can be made when the number in each group is known. They will record their thinking by writing an algebraic sentence.	In Section 3, students will combine their skills from Chapter 4 and Sections 1 and 2 to solve two-step real-world problems. Students will explore problems that have changing events and use all four operations to solve.

Chapter 7: Fractions

Key Learning Objectives

Understanding Unit Fractions and Fractions as Part of a Whole	Fractions as Part of a Set	Understanding Equivalent Fractions and Comparing Fractions
In Sections 1 and 2, students will use concrete materials to understand the meaning of a fraction as part of a whole. Students will define the numerator and denominator, and draw models to show how the number of parts in the whole determines the fraction. Students then see how the parts are combined to make a whole, including more than one whole.	In Section 3, students extend their understanding of fractions to use concrete materials and models to show fractions of a set. Students identify how many objects are in each part and how many are in the whole. Students will use their understanding of division and multiplication to help them solve problems involving the number of items in the parts of the set.	In Sections 4 and 5, students will use concrete materials, models, and number lines to find equivalent fractions. Students will learn that they can compare the sizes of fractions with the same numerator or denominator. For fractions with the same numerator, the greater the denominator, the lesser the fraction. For fractions with the same denominator, the greater the numerator, the greater the fraction.

Chapter 8: Measurement

Key Learning Objectives

Mass: Kilograms and Grams	Liquid Volume: Liters and Milliliters	Real World Problems: One-Step Problems
In Section 1, students explore metric units for measuring mass using different scales. They will see the relationship between grams and kilograms, and convert measurements between units.	In Section 2, students explore metric units for measuring volume and capacity using different measuring cups. They will see the relationship between liters and milliliters, and convert measurements between units. Students will learn the difference between volume (the amount of space occupied by a liquid) and capacity (the greatest amount of liquid a container can hold).	In Section 3, students use bar models to solve real-world problems on metric measurements that require converting between grams and kilograms, and liters and milliliters.

Chapter 9: Area and Perimeter

Key Learning Objectives

Area	Perimeter and Area	Extending Perimeter
In Sections 1, 2, and 3, students explore area by counting square and half-square units on grid paper. They learn that square units can be measured in square centimeters, square meters, square inches, and square feet. Students will draw figures on grid paper and determine the area in the correct unit. They will also estimate which unit would be appropriate to measure specific area.	In Section 4, students explore the relationship between perimeter and area. They continue to use their knowledge of different units of measure to record their answers. Students use addition to determine the perimeter. They also partition rectangles to find the area of rectilinear figures.	In Section 5, students extend their thinking of perimeter by finding the perimeter using the properties of rectangles and squares. They also use their knowledge of multiplication to find the length of sides that are “twice as many” or “three times as many.” The section ends with students combining operations to find the length of a side given the total perimeter and the length of each remaining side.

Chapter 10: Time Key Learning Objectives		
Telling Time	Converting Units of Time	Elapsed Time
<p>In Section 1, students explore telling time to the minute using a variety of language. They can use “before,” “to,” “after,” and “past” to express time. This vocabulary helps students as they move into elapsed time, because they are considering the time in relation to the closest hour.</p>	<p>In Section 2, students convert hours and minutes to minutes and vice versa. They use multiplication to multiply the number of hours by 60, and number bonds to break apart minutes into increments of 60 minutes. They will use several mental math strategies to assist them in breaking apart the numbers.</p>	<p>In Section 3, students use timelines to explore the duration of activities. They are given two of three components: start time, end time, and elapsed time. They place those on the timeline and then break apart the timeline into increments to find the specified information. Toward the end of the section, students will solve multi-step problems.</p>

Chapter 11: Graphs and Line Plots Key Learning Objectives	
Making Picture Graphs with Scales	Making Bar Graphs with Scales
<p>In Section 1, students review concepts they have learned in Grades 1 and 2 by representing data on a picture graph. They will extend their knowledge to create and interpret more picture graphs. Students are encouraged to use multiplication facts to find the total number of data represented in the graph.</p>	<p>In Section 2, students are introduced to horizontal and vertical bar graphs with scales. They see that bar graphs have two axes that are labeled to show information. They also see that one axis usually has numbers that can be represented in a scale.</p>
Reading and Interpreting Bar Graphs	Line Plots
<p>In Section 3, students’ knowledge is extended to more complex bar graphs and scales. They are encouraged to skip count to determine missing numbers along the scales. They will compare data in the graphs and use addition and subtraction concepts to find the total or difference. Multiplication concept is used to find the quantity that is “twice as many as” another.</p>	<p>In Section 4, students explore estimating and measuring given lengths to the nearest quarter, half or whole inch using a ruler. They then record various measures on line plots and analyze the results.</p>

Chapter 12: Angles, Lines, and Two-Dimensional Figures

Key Learning Objectives

Angles	Perpendicular and Parallel Lines	Polygons
<p>In Section 1, students learn that two lines or line segments that meet at a point can create an angle. They explore the differences between lines and line segments and use letters to name them. Through the use of folded paper, students learn about right angles. They use their understanding of right angles to identify angles that are less than a right angle and greater than a right angle.</p>	<p>In Section 2, students will learn how lines and line segments interact with each other. They first build on their understanding of right angles by identifying perpendicular lines. They see that when two lines are perpendicular, they form four right angles where they intersect. Students then learn two properties for identifying parallel lines, and use grid paper to show that parallel lines are always the same distance apart and never intersect.</p>	<p>In Section 3, students culminate their understanding of line segments and angles to explore polygons. They begin by identifying closed figures and defining polygons. They continue to extend their knowledge to identify special polygons, such as triangle, square, rectangle, pentagon, and hexagon. Students then classify quadrilaterals by their angles and how their line segments interact. They will learn to draw a square, a rectangle, a parallelogram, a rhombus, and a trapezoid.</p>