

## 2nd Grade Math in Focus

### Chapter 1: Numbers to 1,000

#### Key Learning Objectives

<b>Read, Write Numbers and Represent Numbers to 1,000</b>	<b>Compare and Order Numbers</b>	<b>Identify Number Patterns</b>
<p>In Sections 1 and 2, students will learn to read and write numbers to 1,000 fluently and express them in different forms. They will use concrete manipulatives to represent numbers to build a strong foundation. Next, students will move on to using place-value charts to show the numbers and the value of each digit. The use of place-value charts helps them deepen their understanding of the concepts</p>	<p>In Section 3, students will learn to compare 3-digit numbers. They will apply the concepts of place value learned in Sections 1 and 2, and use concrete manipulatives to help them understand comparing numbers. Students will apply the concepts of comparing two numbers to compare and order three numbers. The use of place-value charts will help them to visualize the concepts.</p>	<p>In Section 4, students will learn to identify number patterns involving numbers to 1,000. They will apply the various methods and strategies of counting and comparing learned in Sections 1 to 3, and use concrete manipulatives and pictorial representation to help them represent and visualize the patterns. Students will progress on to make their own number patterns.</p>

### Chapter 2: Addition Within 1,000

#### Key Learning Objectives

<b>Add fluently within 100</b>	<b>Add without regrouping</b>
<p>In Section 1, students will apply the mental strategies for adding numbers within 20 to add numbers to 100 fluently with and without regrouping. They will use pictorial representation to add numbers to build a strong foundation. Next, students will move on to using vertical algorithms to add the numbers. They will use number bonds to add mentally within 100.</p>	<p>In Section 2, students will learn to add within 1,000 without regrouping. They will be able to use concrete manipulatives to visualize the addition. They will learn to count in ones, tens, hundreds from 3-digit numbers using counting tape. They will apply the concepts learned in Sections 1 and 2, and use vertical algorithms to add numbers within 1,000 without regrouping.</p>
<b>Add with regrouping</b>	<b>Add three or four 2-digit numbers</b>
<p>In Sections 3, 4, and 5, students will learn to add within 1,000 with regrouping in ones, tens, and ones and tens. They will be able to use concrete manipulatives to visualize the regrouping. They will use number bonds to add ones and tens to 3-digit numbers mentally. They will apply the concepts and use vertical algorithms to add numbers within 1,000 with regrouping.</p>	<p>In Section 6, students will learn to use addition strategies and the algorithm to add up to four 2-digit numbers.</p>

## Chapter 3: Subtraction Within 1,000

### Key Learning Objectives

<b>Subtract fluently within 100</b>	<b>Subtract without regrouping</b>
In Section 1, students will apply the mental strategies for subtracting numbers within 20 to subtract numbers to 100 fluently with and without regrouping. They will use number bonds to break numbers and see the relationship between them. They will use pictorial representation like counting tapes to build a strong foundation in subtracting numbers. Next, students will move on to using vertical algorithms to subtract the numbers.	In Section 2, students will learn to subtract within 1,000 without regrouping. They will be able to use concrete manipulatives to visualize the subtraction. They will learn to count back by ones, tens, hundreds from 3-digit numbers using counting tapes. They will apply the concepts learned in Sections 1 and 2, and use vertical algorithms to subtract numbers within 1,000 without regrouping.
<b>Subtract with regrouping</b>	<b>Subtract across zeros</b>
In Sections 3, 4, and 5, students will learn to subtract within 1,000 with regrouping in tens and ones, or hundreds and tens, or hundreds, tens, and ones. They will be able to use concrete manipulatives to visualize the regrouping. They will use number bonds to subtract ones and tens from 3-digit numbers mentally. They will apply these concepts and use vertical algorithms to subtract numbers within 1,000 with regrouping.	In Section 6, students will learn to regroup hundreds into tens and ones to subtract from 3-digit numbers with zeros.

## Chapter 4: Using Bar Models: Addition and Subtraction

### Key Learning Objectives

<b>Use Part-Whole in Addition and Subtraction</b>	<b>Add On and Take Away Sets</b>
In Section 1, students will learn to interpret the part-whole concept in the addition and subtraction problems by representing them using bar models. The use of concrete manipulatives to represent adding sets of objects or to find one set from a group will help build a strong foundation in understanding of addition and subtraction.	In Section 2, students will extend the use of concrete manipulatives to add on or to take away sets to subtract. They will apply this understanding to represent one-step real-world problems pictorially and solve them by using the appropriate operation to construct a number sentence.
<b>Compare Two Sets</b>	<b>Real-World Problems: Two-Step Problems</b>
In Section 3, students will learn to interpret and represent the concept of comparing in addition and subtraction problems pictorially. The concepts learned by using concrete manipulatives to compare two sets, are applied to add or to subtract from comparison models.	In Section 4, students will learn to solve two-step real-world addition or subtraction problems by applying the concepts learned in Sections 1, 2, and 3. They will use the bar models to represent and visualize the problems and to construct number sentences. They will apply the various methods and strategies learned in Chapters 2 and 3 to add and subtract.

## Chapter 5: Length

### Key Learning Objectives

<b>Measure in Meters and Centimeters</b>	<b>Compare and Order Lengths</b>
In Sections 1 and 2, students will learn to use meter stick and centimeter ruler to measure and estimate length, width or height in meters and centimeters respectively. The use of appropriate tools for measurement depending on the size of the object to be measured will help build a strong foundation in the understanding of the two units of metric lengths.	In Sections 3 and 7, students will learn to compare metric lengths and customary lengths respectively by using addition and subtraction strategies. The concepts learned in comparison will be applied in ordering objects according to their lengths.
<b>Real-World Problems: Addition and Subtraction of Metric Lengths and Customary Lengths</b>	<b>Measure in Feet and Inches</b>
In Sections 4 and 8, students will learn to solve one-step and two-step real-world problems involving metric lengths and customary lengths respectively, by applying the concepts learned in Sections 1, 2, and 3, and Sections 5, 6, and 7. They will use bar models to represent and visualize the problems and to construct number sentences. They will apply the various methods and strategies learned in Chapters 2 and 3 for addition and subtraction of lengths.	In Sections 5 and 6, students will learn to use foot ruler and inch ruler to measure and estimate length, width or height in foot/feet and inches respectively. The use of appropriate tools for measurement depending on the size of the object to be measured will help build a strong foundation in the understanding of the two units of customary lengths.

## Chapter 6: Mass

### Key Learning Objectives

<b>Measuring in Kilograms and Grams</b>	<b>Comparing Masses in Kilograms and Grams</b>	<b>Real-World Problems: Addition and Subtraction of Masses</b>
In Sections 1 and 2, students will learn to use pictorial representations to measure masses in kilograms using balance scales with 1-kilogram masses or in grams with 1-gram masses. Next, they will proceed to learn to read masses using measuring scales in kilograms or grams.	In Section 3, students will learn to use pictorial representations to compare and order masses by reading the measuring scales to identify the heaviest object and the lightest object.	In Section 4, students will learn to solve real-world problems by constructing number sentences. They will use bar models to help them to represent and visualize real-world problems. Then, they will apply various methods and strategies of addition and subtraction to solve them.

## Chapter 7: Graphs and Line Plots

### Key Learning Objectives

Picture Graphs	Bar Graphs	Line Plots
In Section 1, students will learn to collect data and draw picture graphs based on it. The pictorial representation of data helps students to visualize the data in order to read, analyze, and interpret it, as well as compare the different groups. Students will be able to use addition and subtraction to be able to answer questions based on the picture graphs.	In Section 2, students will learn to collect data and draw bar graphs based on it. The pictorial representation of data helps students to visualize the data in order to read, analyze, and interpret it, as well as compare the different groups. Students will be able to use addition and subtraction to be able to answer questions based on the bar graphs.	In Section 3, students will learn to collect data and draw line plots based on it. The pictorial representation of data helps students to visualize the data in order to read, analyze, and interpret it. Students will be able to compare the different groups and answer questions based on the line plots.

## Chapter 8: Multiplication and Division

### Key Learning Objectives

Multiplication	Division
In Section 1, students will learn to form equal groups by using concrete materials like counters and connecting cubes. Students will translate this concept to pictorial representations in which they will identify equal groups and find the total number of items by using repeated addition. They will explore and relate repeated addition to multiplication. They will then move to the abstract concept of making multiplication sentences.	In Section 2, students will learn to use concrete materials to share equally. They will also learn to find the number of equal groups by using repeated subtraction. Students will then apply these concepts to pictorial representations to understand how division can be used in two different scenarios. They will then move to the abstract concept of making division sentences.
Real-world problems	Even and odd numbers
In Section 3, students will learn to apply the concepts learned in Sections 1 and 2 to solve real-world problems involving multiplication and division.	In Section 4, students will use concrete materials to reinforce the concept of forming groups of 2. This will lead them to learn about even and odd numbers by using pictorial representations of objects. Students can explore the even and odd numbers to be able to identify them by using the abstract concept of expressing them as a sum of two equal numbers.

## Chapter 9: Multiplication Tables

### Key Learning Objectives

<b>Multiply by 2, 3, 4, 5, and 10</b>	<b>Multiply in any order</b>	<b>Divide using multiplication facts</b>
<p>In Sections 1 to 5, students will recall using concrete objects to make equal groups and write multiplication sentences. Students will learn to make multiplication tables by skip counting. They will use different strategies like skip counting by adding 2, 3, 4, 5, 10, counting by 2s, 3s, 4s, 5s, and 10s, using dot paper, and using fingers or counters to skip count. Students will be able to commit to memory different multiplication facts and then, use the known multiplication facts to find other multiplication facts.</p>	<p>In Section 6, students will use pictorial representations of objects and dot papers to make different multiplication sentences. They will use these to see that the total number of objects or dots on the dot paper remains the same even if the order of numbers in a multiplication fact is reversed. Students will use this to interpret that the numbers in a multiplication sentence can be interchanged without changing the answer. Students will conclude that numbers can be multiplied in any order.</p>	<p>In Section 7, students will begin by using different ways to group concrete objects. They will learn to write division sentences corresponding to making equal groups. Students will be able to recall the related multiplication fact and use it to find the division answer. Students will use the relationship between the two operations to write related multiplication and division facts and make fact families.</p>