Math Mammoth Grade 1, 2026 edition
Alignment to the Common Core Standards

This document lists the Common Core Standard(s) relevant to each lesson in the two student worktexts, 1-A and 1-B (2026 edition). For each chapter, I also list the main standards covered in the chapter, discuss what students have learned in previous grades that is foundational to those, and what they are learning in future grades that ties in with the major topics of the chapter.

Contents

Math Mammoth Grade 1-A

Chapter 0: Kindergarten Review

This chapter is optional. You can use it to check that your child/student has mastered the important concepts of kindergarten math. The lessons do not review every concept from kindergarten math, but they do cover the ones I have deemed important:

- writing the numerals from 0 to 20
- reciting the counting sequence up to 100
- counting up to 20 individual items
- comparing numbers between 1 and 10
- the concepts of addition and subtraction; representing addition and subtraction with drawings
- understanding that a number can be decomposed into pairs in more than one way (e.g. 6 = 3 + 3 but also, 6 = 2 + 4)
- solving very simple addition and subtraction word problems (within 0-10)
- correctly naming basic shapes

We will practice several of these still in first grade, but the skills that are essential before going on to the other chapters in Grade 1 are being able to correctly count up to 20 items, being able to write the numerals from 0 to 20, and the basic concepts of addition and subtraction.

Please note: decomposing the numbers from 11-19 as sums of "10 + some number" will also be covered in detail later in grade 1. The reason it is introduced in kindergarten is to *prepare* children to learn place value. Before going on to chapter 1 of Math Mammoth Grade 1, it is essential is that the child is able to recite the counting sequence at least up to 20, and to write those numerals. It is not essential for the child to understand that 18 is 10 + 8; that will be covered in chapter 3.

Relevant kindergarten standards for this chapter

K.CC.1. Count to 100 by ones and by tens.
K.CC.2. Count forward beginning from a given number within the known sequence (instead of having to begin at 1).
K.CC.3. Write numbers from 0 to 20. Represent a number of objects with a written numeral 0-20 (with 0 representing a count of no objects).
K.CC.4. Understand the relationship between numbers and quantities; connect counting to cardinality. a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object. b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted. c. Understand that each successive number name refers to a quantity that is one larger.
K.CC.5. Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.
K.CC.6. Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.
K.CC.7. Compare two numbers between 1 and 10 presented as written numerals.

K.NBT.1. Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.
K.OA.1. Represent addition and subtraction with objects, fingers, mental images, drawings2, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.
K.OA.2. Solve addition and subtraction word problems, and add and subtract within 10, e.g., by using objects or drawings to represent the problem.
K.OA.3. Decompose numbers less than or equal to 10 into pairs in more than one way, e.g., by using objects or drawings, and record each decomposition by a drawing or equation (e.g., 5 = 2 + 3 and 5 = 4 + 1).
K.OA.4. For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.
K.OA.5. Fluently add and subtract within 5.
K.G.1. Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above*, *below*, *beside*, *in front of*, *behind*, and *next to*.
K.G.2. Correctly name shapes regardless of their orientations or overall size.
K.G.3. Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").
K.G.4. Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).
K.G.6. Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*

Chapter 1: Addition Within 0-10

The first chapter of *Math Mammoth Grade 1* focuses on various concepts related to addition, and on the basic addition facts within 0-10.

We start out by reviewing the concept of addition, which has already been taught in kindergarten, in the lesson *Basic Addition*. The following lesson (*Counting on to Add*) explains how you can add 1, 2, or 3 to a number by counting on 1, 2, or 3 steps *from* that number. This is a simple strategy to us adults, but children may need it pointed out.

The next two lessons build on the thought of counting on, as students learn to illustrate sums with jumps on a number line. A number line is an important way to model addition, as it helps to build number sense and will tie in with measurement, later on.

Then, we review comparing numbers and using the symbols >, <, and = to record the comparisons.

Next, we introduce "missing number" problems (e.g. 1 + ___ = 5) over the course of two lessons. These problems are very important, as they connect with fact families and with subtraction.

The child might confuse the missing number problem 1 + ___ = 5 with 1 + 5 = ___ . To help them see the difference, word these problems like this: "One and *how many more* make five?" You can also model these problems by drawings. In our example of 1 + ___ = 5, you would first draw one stick, and then tell the student, "We need a total of five sticks. Draw more until there are five of them." The number of sticks that the child needs to draw in order to make five is the missing number. So, you can say, "First there was one stick, then you needed to add (draw) some more to make 5. How many more did you draw?"

Then we come to the lessons titled *Sums to* These lessons practice the number bonds (number combinations) that add up to a particular number. In the case of 5, they are 0 and 5, 1 and 4, and 2 and 3. The goal is to help the child to memorize the addition facts within 0-10. We will deal with these addition facts again in chapter 5, in context of fact families, and along with the corresponding subtraction facts.

My approach to memorizing the basic addition facts within 0-10 is many-fold:

1. Structured drills, such as used in the lessons *Sums to 5*, *Sums to 6*, and so on. In each of these lessons, the child learns the number combinations that add up to the specific number (aka number bonds). This understanding is the basis for the drills. Thus, the drills are not totally random, because they are based on the pattern or the structure in the facts. This will connect the facts to a context, and help the child to better understand the facts on a conceptual level, instead of merely memorizing them at random.
2. Using addition facts in games and in everyday life is very helpful — and especially in games, because all children like to play games.
3. Random drilling may also be used, sparingly, as one tool among others.
4. Memory helpers can be silly mnemonics or writing math facts on a poster and hanging it on the wall. Not all children need these, but feel free to use them if you like.

Before closing the chapter, we focus on the thought of equality and the usage of the equals sign (=). Many children develop a misconception of the equals sign being an "operator," as if it means that you need to add/subtract/multiply/divide, or "operate" on the numbers in the problem. A child with this misconception will treat the equation 9 = __ + 4 as the addition problem 9 + 4. The lessons on equality and comparisons focus on preventing that erroneous view, and on building the proper understanding of the symbol: that of denoting equality of what is on either side of the symbol. For example, students will see and work with equations such as 5 = 4 + 1 and 3 + 5 = 4 + 4.

In this chapter, students also encounter addition tables, number patterns, word problems, and adding three or four numbers. So, while on the surface it may look like that all we do is add small numbers, actually a lot happens! Please also see the following pages for games that I recommend while studying this chapter. Games are important at this level, as they help children to practice the addition facts and also make math fun.

What we are coming from

In kindergarten, children learned the basic concept of addition and decomposed numbers into two parts.

What we are going towards

The basic addition facts within 0-10 are used a lot in the following chapter (Chapter 2: Subtraction Within 0-10) and they are studied and practiced again in chapter 5 (Addition and Subtraction Facts). They are also used constantly in all later math work. I recommend that children become fluent with addition and subtraction facts within 0-10 by the end of first grade.

Chapter 8 is another chapter devoted to addition and subtraction. At that time, students add and subtract within 0-20 and also learn to add and subtract two-digit numbers in specific cases.

Relevant 1st grade standards

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem
1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.3 Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*
1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.*

Lesson	page number	Standards
Basic Addition	30	1.OA.1, 1.OA.3, 1.OA.6
Counting On to Add	32	1.OA.5
Adding on the Number Line 1	34	1.OA.5
Adding on the Number Line 2	37	1.OA.5
Comparing Numbers	39	
Missing Numbers 1	41	1.OA.8
Missing Numbers 2	43	1.OA.8
Sums to 5	45	1.OA.6

Sums to 6	47	1.OA.6, 1.OA.8
Word Problems	49	1.OA.1
Sums to 7	51	1.OA.1, 1.OA.6, 1.OA.8
Sums to 8	53	1.OA.6
Adding Three Numbers	55	1.OA.3, 1.OA.2
Adding Many Numbers	57	1.OA.3
Sums to 9	59	1.OA.1, 1.OA.6, 1.OA.8
Equality	61	1.OA.7, 1.OA.8
Comparisons	63	
Addition Practice	65	1.OA.3, 1.OA.6
Sums to 10	67	1.OA.1, 1.OA.6
More Practice	69	1.OA.1, 1.OA.6, 1.OA.8
Chapter 1 Review	71	1.OA.3, 1.OA.6, 1.OA.7, 1.OA.8

Standards for Mathematical Practice

- (MP.6) Learning the meaning of the equals sign, and learning to use it correctly, is part of attending to precision in mathematics. Too many people are “loose” in their usage of this sign, writing things such as: $20 + 40 = 60 \times 3 = 180$. This is an attempt to record two different calculations in one line, but it is imprecise, because in mathematics, anything on either side of the equals sign is supposed to be equal. This claims that $20 + 40$ is equal to 60×3, which is equal to 180.
- (MP.7) As children study the sums of 5, sums of 6, sums of 7, and so on, they will see patterns in these addition facts, and will learn these facts within a structure, not as random facts. Mathematics has been called “the science of patterns,” and thus, recognizing patterns and structures is the pure essence of mathematics.

Chapter 2: Subtraction Within 0-10

The second chapter of *Math Mammoth Grade 1* covers the concept of subtraction, the relationship between addition and subtraction, and the various meanings of subtraction.

In the first lesson, *Subtraction Is Taking Away*, the child learns the basic meaning of subtraction as taking away objects, and learns to write subtractions from an illustration where some objects are crossed out. The child can figure out the answers by simply counting how many objects are left.

If the child does not yet know the word "minus," it is a good idea to introduce it first orally. Use blocks or other concrete objects. For example, show the child eight blocks and take away three blocks. Then use both kinds of wordings: "Eight blocks, take away three blocks, leaves five blocks. Eight blocks *minus* three blocks *equals* five blocks." Then let the child do the same. Play with concrete objects until the child can use the words "minus" and "equals" in his or her own speech.

In the next lesson, the child counts down to subtract, which ties in subtraction with the number line. This is a transitional strategy to solve subtraction problems, because later students will learn more efficient ways to subtract, but it is important conceptually. For now, the student can solve 9 − 3 by counting down three steps from nine: eight, seven, six. So the answer is six.

The following lesson, *Subtraction and Addition in the Same Picture*, begins the study of the relationship between addition and subtraction. This concept will span several lessons. This first lesson presents two sets of objects, such as blue and white balls, and the student writes both an addition sentence and a subtraction sentence from this illustration.

The lesson *When Can You Subtract?* concentrates on the idea that some subtractions, such as 4 − 5, are meaningless when you think of taking away. The child also makes subtraction patterns in this lesson.

Then we continue studying the connection between addition and subtraction in the lesson *Two Subtractions from One Addition*. As an example, the child writes both 8 − 3 = 5 and 8 − 5 = 3 from the addition 3 + 5 = 8. This idea ties in with fact families, a concept that is coming up soon.

In the lesson *Two Parts—One Total,* we study word problems that do not involve the idea of taking away but have two parts making up a total. For example, if there are 10 flowers of which some are white and some are red, and seven of them are white, how many are red? We know the "parts" (the red and white flowers) add up to 10, so we can write a missing addend sentence 7 + __ = 10. This can be solved by subtracting 10 − 7 or by knowing the addition fact 7 + 3 = 10.

Then we study fact families. This means writing two additions and two subtractions using the same three numbers. Fact families will be used extensively in the next chapter.

In the lesson *How Many More?* students find how many more or how many fewer objects one person has than the other by drawing the objects. This lesson can easily be done with manipulatives if desired.

In the very next lesson, *"How Many More" Problems and Differences,* we continue the theme, this time writing a missing addend addition for problems that ask "how many more." For example, Veronica has 4 marbles and Ann has 6. We write the missing addend sentence 4 + ___ = 6 to find how how many more Ann has. In the next lesson the child then learns to write subtraction sentences for such problems.

Feel free to mix the lessons from this chapter with the lessons from Chapter 3 (place value) if your student or child gets bored or has attention issues with the topic of subtraction.

What we are coming from

In kindergarten, children have learned the basic concept of subtraction. They have also decomposed numbers into two parts.

What we are going towards

The basic addition and subtraction facts will be practiced in chapter 5 (Addition and Subtraction Facts). They are also used constantly in all later math work. I recommend that children become fluent with addition and subtraction facts within 0-10 by the end of first grade.

Chapter 8 is another chapter devoted to addition and subtraction. At that time, students add and subtract within 0-20 and also learn to add and subtract two-digit numbers in specific cases.

Relevant 1st grade standards

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem
1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*
1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*
1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.*

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.

Lesson	page number	Standards
Basic Subtraction	80	1.OA.1, 1.OA.6
Subtracting on the Number Line	82	1.OA.5
Count Down to Subtract	84	1.OA.5, 1.OA.1
Subtraction and Addition in the Same Picture	86	(1.OA.4)
When Can You Subtract?	89	1.OA.6
Equations	91	1.OA.7
Two Subtractions from One Addition	93	(1.OA.4), 1.OA.7
Two Parts—One Total	96	1.OA.1, (1.OA.4)
Fact Families	98	(1.OA.4)
More Fact Families	100	(1.OA.4), 1.OA.7, 1.OA.8
Subtraction Practice	102	1.OA.1, 1.OA.6, 1.OA.8
How Many More? Part 1	104	1.OA.1
How Many More? Part 2	106	1.OA.1

How Many More? Part 3	108	1.OA.1
Difference	110	1.OA.1
“How Many More” Problems and Subtraction	112	1.OA.4, 1.OA.1
Solving Subtraction Problems with Addition	114	1.OA.4, 1.OA.1, 1.OA.6, 1.OA.7, 1.OA.8
Chapter 2 Mixed Review	116	1.OA.1, 1.OA.3, 1.OA.8
Chapter 2 Review	118	1.OA.1, 1.OA.4, 1.OA.6

Standards for Mathematical Practice

- (MP.1) In the previous chapter, students mainly encountered word problems of these types of situations: “add to” and two parts forming a whole. These situations are still present in the problems in this chapter, but we will now also include “take from” type of situations and comparisons (how many more/fewer).

  This means the word problems in this chapter may involve either addition or subtraction. Note that often, the same problem can be solved either by subtraction or by a missing-number addition. Consider for example this problem: “Julie has eight shirts, but she can only find two. How many are missing?” It can be solved by subtraction $8 - 2$ or by thinking of the addition $2 + \_\_\_ = 8$.

  Including a variety of word problem situations is important, so that children learn to think and not merely blindly apply the operation in the title of the lesson. Practice makes perfect, including in problem solving, and our goal is to start early.

  If your student makes a mistake (whether in word problems or elsewhere), don't put down the mistake. Mistakes are actually valuable as they enable the neurons in the brain to grow new connections. Thinking about mistakes and trying to correct them literally causes your brain to grow! So, just encourage your student(s) to try again when they get something wrong. You can also ask them to explain their thinking, and gently guide them towards the correct “path.”

Chapter 3: Place Value Within 0-100

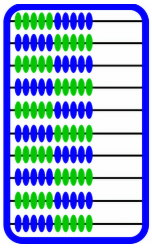
This chapter covers place value with two-digit numbers, which means students learn to think of two-digit numbers in terms of their tens and ones. They also compare two-digit numbers and learn to count up to 120.

In kindergarten, children have written numbers from 11 to 19 as a sum of 10 + some other number, preparing to learn place value. They have also learned to count to 100 by ones and by tens. However, learning to count does not equal understanding place value. In this chapter your child or students learn that the two digits of a two-digit number represent the amounts of *tens* and *ones*. In second grade, they learn that the three digits of a three-digit number represent the amounts of hundreds, tens, and ones. This knowledge is then extended to yet larger numbers in later grade levels.

Understanding place value is crucial to all further learning of mathematics. A student that does not grasp how 72 really means 7 tens and 2 will have trouble with most math topics from this point on, such as adding and subtracting two-digit numbers, whether with mental math or with paper-and-pencil methods.

As children learn to count, they basically perceive numbers as some kind of continuum that goes on without end. With simple counting, the child might not catch on to the inherent structure of the number system. Our number system is based on the idea that the efficient way to count lots of objects *and* denote them is with *groups* of tens, hundreds, and thousands — not individually.

The crucial point in understanding the concept of place value is therefore that a **certain position represents a group of a specific size**. The digit in each position tells us how many groups of that size there are. For example, in the number 2,381, the 8 represents eight tens, and not just "8" and the 3 represents three hundreds, and not just "3". The place of the digit tells us the size of the group, and the digit itself tells how many of that group.



The initial lessons in the chapter that introduce tens and ones use a **100-bead abacus** extensively. This 100-bead abacus or school abacus simply contains ten beads on ten rods, for a total of 100 beads. It is not the special abacus used by the Chinese or the Japanese. Each bead simply represents one. The 100-bead abacus lets children both "see" the numbers and use their touch while making them.

You will need to purchase this school abacus separately, such as on Amazon, or make your own. You can browse Amazon's abacus collection at this link:
https://www.amazon.com/s?k=abacus+100+beads&ref=nb_sb_noss_1&tag=mathmammoth-20

Here is a link to an online virtual abacus: https://apps.mathlearningcenter.org/number-rack/

Or, you can make one on your own. This is a fairly easy craft project and you can easily find instructions for it on the Internet (search for example for "DIY abacus").

Besides the abacus, we also use a visual model of blocks where ten of them "snap" together to form a stick. If you already have these base-ten blocks, you can use them along with the visual exercises, if you prefer.

Moreover, we also use number lines and a 100-chart. Number lines help visualize how numbers continue indefinitely and also relate to the concept of measuring. The 100-chart helps the child to be familiar with the numbers and find patterns.

While most of the lessons here focus on place value, students also learn some mental math. They learn to add 10 to any two-digit number (e.g. 78 + 10), subtract 10 from any two-digit number (e.g. 45 − 10), and add and subtract multiples of ten (e.g. 20 + 70 or 50 − 20). We base these mental calculations on our understanding of place value. We add 10 to, say, 78, by adding 1 to the tens digit, and similarly for subtracting 10. The sum 20 + 70 is easily found by thinking of 2 tens + 7 tens = 9 tens.

Skip-counting is presented a few times in the context of the 100-chart, but is an optional topic. It will be revisited in 2nd and 3rd grades.

Children have encountered ordinal numbers in kindergarten and in daily life, and thus it is probably an easy topic. It is presented here for completeness' sake. If time is an issue, it can be omitted.

What we are coming from

In kindergarten, children have written numbers from 11 to 19 as a sum of 10 + some other number, preparing to learn place value. They have also learned to count to 100 by ones and by tens.

What we are going towards

In second grade, children learn that the three digits of a three-digit number represent the amounts of hundreds, tens, and ones. This knowledge is then extended to yet larger numbers in later grade levels.

Relevant 1st grade standards

1.NBT.1 Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.
1.NBT.2 Understand that the two digits of a two-digit number represent amounts of tens and ones. Understand the following as special cases: a. 10 can be thought of as a bundle of ten ones — called a "ten." b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones. c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).
1.NBT.3 Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.
1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.
1.NBT.5 Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.
1.NBT.6 Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.

Lesson	page number	Standards
Counting in Groups of 10	124	(1.NBT.2)
Naming and Writing Numbers 1	126	1.NBT.2
Naming and Writing Numbers 2	128	1.NBT.2
The "Teen" Numbers	131	1.NBT.2
The 100-Chart, Part 1	134	1.NBT.2
The 100-Chart, Part 2	136	1.NBT.2
Add and Subtract with Tens	138	1.NBT.4, 1.NBT.6
Add or Subtract 10, Part 1	140	1.NBT.5
Add or Subtract 10, Part 2	142	1.NBT.4, 1.NBT.5, 1.NBT.6

Comparisons, Part 1	144	1.NBT.3
Comparisons, Part 2	146	1.NBT.3
Numbers Past 100	148	1.NBT.1
More Practice	150	1.NBT.1, 1.NBT.3, 1.NBT.5, 1.NBT.6
Skip-Counting Practice (optional)	152	
Ordinal Numbers	155	
Chapter 3 Mixed Review	157	1.OA.1, 1.OA.3, 1.OA.6
Chapter 3 Review	159	1.NBT.1, 1.NBT.2, 1.NBT.3, 1.NBT.4, 1.NBT.5

Standards for Mathematical Practice

- (MP.7) Mathematics is a science of *patterns* and *structures*. Learning about the place value system means studying the basic structure of numbers themselves. Like already mentioned, the topics of this chapter are extremely foundational and important for all future mathematics work.
- (MP.5) Children will use the 100-bead abacus as a basic tool in this chapter. They also encounter the 100-chart and number lines. Another common way to illustrate numbers is base-ten blocks, and the lessons use visual illustrations of them. You are welcome to use physical base-ten blocks with the lessons also, if you like. All of these are useful tools, and becoming familiar with them will allow students in later grades to choose the best tool(s) for the problem at hand.

Chapter 4: Time

In this chapter we cover reading analog and digital clocks to whole and half hours, and some basics of the calendar.

The first lesson uses an analog clock that only has the hour hand. We omit the minute hand for a reason: this way the child can concentrate on the hour hand only, and learning to tell whole and half hours becomes much easier. We also practice telling what time it is one hour or a half-hour later than a given time.

The next lesson focuses on minutes. The aim of this lesson is to learn that one hour is 60 minutes, that a half-hour is 30 minutes, and how the phrases “o’clock” and “half past” relate to the hours and minutes. For example, the child is to learn that “half past eight” is written 8:30, and the “30” part is the number of minutes, so half an hour is just 30 minutes.

This lesson also includes a few exercises about reading the clock to five-minute intervals using a special clock that includes the numbers for the minute hand; however, these can be skipped if desired, because in second grade, the student will get a lot of practice reading the clock to the nearest five minutes.

The next lesson deals with morning and afternoon hours: AM and PM. The goal is for the student to understand that the clock starts at 12 midnight, and goes through all the A.M. hours from 1 to 12 until it is 12 noon, and then goes through all of the P.M. hours from 1 to 12 until it is 12 midnight again.

We will also briefly look at the calendar and practice the names of the months.

In second grade, students tell and write time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. Then in third grade, they tell and write time to the nearest minute, measure time intervals in minutes, and sold word problems involving time intervals.

Reading the clock is a skill that can and should be practiced in everyday situations from now on so that children can learn by experience, and not just by filling in pages in their math book.

What we are coming from

In kindergarten and earlier, children have naturally learned, through their day-to-day lives, about the concept of time, clocks, weekdays, and months.

What we are going towards

In second grade, children learn to tell time from analog and digital clocks to the nearest five minutes, using a.m. and p.m. In third grade, they learn to tell time to the minute and to measure time intervals. They also solve problems involving addition or subtraction of time intervals.

Relevant 1st grade standard

> **1.MD.3** Tell and write time in hours and half-hours using analog and digital clocks.

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.

Lesson	page number	Standards
Whole and Half Hours 1	164	1.MD.3
Whole and Half Hours 2	167	1.MD.3
Practicing with Time	170	1.MD.3
AM and PM	172	(2.MD.7)
The Calendar (optional)	175	
Chapter 4 Mixed Review	177	1.OA.6, 1.OA.7, 1.NBT.1, 1.NBT.2, 1.NBT.3, 1.NBT.4, 1.NBT.5, 1.NBT.6
Chapter 4 Review	179	1.MD.3

Chapter 5: Addition and Subtraction Facts

This chapter provides lots of practice for learning and memorizing the basic addition and subtraction facts with numbers from 0 to 10. The Common Core Standards require children in the first grade to demonstrate fluency in addition and subtraction with numbers up to 10, and we aim for that goal here.

Since this chapter is repetitive, consider studying it simultaneously with some other section of the curriculum, such as shapes, measuring, graphs, and/or counting coins. For example, the child could study shapes and this chapter each day, or study the two different chapters on alternate days. (This is not compulsory but just a suggestion to "mix things up" in a somewhat spiral fashion.)

Each of the lessons titled *Addition and Subtraction Facts with*. approaches the fact memorization from the concept of *fact families*, which makes the process logical and structured. For example, we study the fact families where the sum is 7, all in one lesson. This means the different sums that make seven (0 + 7, 1 + 6, 2 + 5, 3 + 4) and their corresponding subtraction facts are practiced together.

Many children may not need all the practice problems provided, so don't assign all of them by default. Use your judgment, and only assign a certain portion, such as half of them, at first. (The rest of them can be used later as a review.) Adjust as necessary.

Alongside the lessons, you can use math games and/or flashcards to reinforce the facts. You will find a list of some games below.

While your child or students do not absolutely have to learn these facts by heart while studying this chapter, it is advisable to learn them fairly well. Mathematics builds upon previously learned concepts and facts, and learning addition and subtraction facts is very important for later study, such as when students learn to add a two-digit number and a single digit number (e.g. 24 + 5, in chapter 8). However, if the child has not memorized these facts before the end of the chapter, don't worry. Go on with the curriculum, but keep practicing the facts with games, worksheets, drills, *etc.*

Besides practicing the facts with the help of fact families, the student will also solve word problems, fill in number patterns, get used to a symbol representing an unknown number, compare number expressions (such as 5 − 2 and 2 + 5), and subtract more than one number at a time.

What we are coming from

In chapters 1 and 2, children learned a lot about addition and subtraction within 0-10.

What we are going towards

In chapter 8, children will add and subtract two-digit numbers and also within 0-20.

Relevant 1st grade standards

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.2 Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.3 Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*
1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*

1.OA.5 Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).
1.OA.7 Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*
1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.*

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.

Standards for Mathematical Practice

- (MP.1) As we return to addition and subtraction, there are again lots of word problems to solve. Some of them will ask the student to choose or write an equation that matches the problem. This is the beginning stage of *mathematical modeling*: using mathematics to model real-life situations. Writing an equation for a problem is simple at this stage (e.g. 2 + 3 = 5) but it is a separate skill from just solving the problem.

  Essentially, the student will be showing their work for the problem. This will probably take some time to master, so don't worry if this is challenging for your child or student at this point. If so, ask them sometimes to write down the calculation even for word problems where the instruction doesn't explicitly state so.

Chapter 6: Shapes and Fractions

This sixth chapter of *Math Mammoth Grade 1* covers basic shapes, composing and decomposing shapes, and halves and fourths.

Children explore basic properties of shapes, such as the number of sides, whether the shape has right angles ("square" corners), or whether some of its sides are the same length. Then they also compose and decompose geometric figures. This means, for example, putting two triangles together to make a quadrilateral, or dividing a square into two triangles. Composing and decomposing figures helps children understand part-whole relationships as well as observe and learn the properties of the original and composite shapes.

The lessons in this chapter can seem quite easy, but they are laying a proper foundation for geometric understanding in later years. For example, composing and decomposing shapes helps develop a foundation for understanding area (studied in 3rd grade and onward). Analyzing the properties of shapes, such as the presence or absence of right angles or sides that are the same length, prepares students to study congruence. Dividing shapes into parts helps to build an understanding of part-whole relationships for the study of fractions. And this is why we study fractions in this chapter — fractions arise from dividing a whole (such as a shape) into equal parts.

What we are coming from

Children may not have encountered explicit instruction about fractions before this time. However, seeing adults cut food items or other things into smaller pieces has prepared them for these concepts. Also, in kindergarten, children learned and explored part-whole relationships when they put together simple shapes to form larger shapes.

What we are going towards

In second grade, students work with halves, thirds, and fourths in a similar manner as they do here in first grade with halves and fourths. Then in third grade, they start learning about fractions as numbers, and learn about fractions that are equivalent to each other. In further grades, they will then learn to do the four operations with fractions.

Relevant 1st grade standards

1.G.1 Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.
1.G.2 Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.4
1.G.3 Partition circles and rectangles into two and four equal shares, describe the shares using the words halves, fourths, and quarters, and use the phrases half of, fourth of, and quarter of. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.

Lesson	page number	Standards
Basic Shapes 1	50	1.G.1
Basic Shapes 2	52	1.G.1
Basic Shapes 3	55	1.G.1
Solids	59	1.G.2
Composing Shapes	63	1.G.2
Composing and Decomposing Shapes 1	64	1.G.2
Composing and Decomposing Shapes 2	66	1.G.2
Halves and Quarters, Part 1	68	1.G.3
Halves and Quarters, Part 2	70	1.G.3
Chapter 6 Mixed Review	73	1.OA.7, 1.OA.1, 1.NBT.1, 1.NBT.2, 1.NBT.4, 1.NBT.6, 1.MD.3
Chapter 6 Review	75	1.G.1, 1.G.2, 1.G.3

Chapter 7: Measurement

This chapter of *Math Mammoth Grade 1* covers the basic concept of measuring (as iterating a measurement unit enough times to match the length of the object), plus measuring length in whole inches and centimeters. The main goal is for the child to understand that measuring length is a process of iterating (repeating) the unit of measure.

Note: If you have the electronic version of this book (a PDF file), you need to print the pages at 100%, instead of using "shrink to fit," "print to fit," or similar options from your printer. Printing with "shrink to fit" will cause the images to be slightly smaller than intended, and thus some exercises about measuring in inches and centimeters will no longer be a whole-number amount of inches or centimeters.

What we are coming from

In Kindergarten, children have learned about the concepts of length and weight. They have compared two objects to find out, for example, which is taller, longer, or heavier.

What we are going towards

In second grade, students learn to measure the length of objects in inches (to the nearest half inch), feet, centimeters, and meters, using appropriate tools. In third grade, they will measure objects to the nearest fourth inch and in centimeters and millimeters, plus measure and estimate liquid volumes and masses/weights of objects. Starting a little in 3rd, but especially in 4th and 5th grades, they will learn conversions between measurement units.

Relevant 1st grade standards

1.MD.1 Order three objects by length; compare the lengths of two objects indirectly by using a third object.
1.MD.2 Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.

Chapter 8: Adding and Subtracting Within 0-100

This chapter deals with two major topics: adding and subtracting within 0-20 and adding and subtracting two-digit numbers. These two major topics are blended together in a somewhat spiral manner. The subtopics include:

- Adding a two-digit number and a single-digit number without regrouping (carrying) (for example, 23 + 4 or 56 + 3).
- Subtracting a one-digit number from a two-digit number without regrouping (borrowing): For example, 45 − 3 or 67 − 6.
- Adding and subtracting two-digit numbers in columns (one number under the other) without regrouping.
- Recognizing that sometimes in adding two-digit numbers we need to regroup — to combine ten ones to make a new ten. In this grade level, we approach this concept mainly using visual models. Children are also welcome to use the 100-bead abacus to solve these problems. The standard algorithm where one number is written under the other will be studied in 2nd grade.
- Learning specific mental math strategies for adding and subtracting numbers under 20 (such as 7 + 9 or 15 − 8). We study a trick with nine and eight, adding just one more than a known sum, and using the relationship between addition and subtraction to subtract.

Please note that while the chapter includes several basic strategies for adding and subtracting within 0-20, the goal is not to memorize the basic addition where the sum is between 11 and 18, and the corresponding subtraction facts. That will happen in 2nd grade. Right now, the idea is to build the student's **number sense**: the ability to manipulate numbers by breaking them apart and composing them in different ways.

What we are coming from

Earlier in first grade, children have practiced addition and subtraction within 0-10. They have also learned to add 10 to any two-digit number or subtract 10 from any two-digit number, and to add and subtract multiples of ten (e.g. 20 + 40 or 80 − 40).

What we are going towards

In second grade, your child or students will learn the traditional paper-and-pencil algorithms of adding and subtracting in columns. They will also learn more mental math. This means they will be able to fluently add and subtract numbers within 0-100. They will also learn to add and subtract three-digit numbers.

Relevant 1st grade standards

1.OA.1 Use addition and subtraction within 20 to solve word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.
1.OA.3 Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*
1.OA.4 Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*
1.OA.6 Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).

1.OA.8 Determine the unknown whole number in an addition or subtraction equation relating three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = □ – 3, 6 + 6 = □.*

1.NBT.4 Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.

Standards for Mathematical Practice

- (MP.7) Mental math strategies allow your child or students to observe patterns inherent in our base-ten number system. For example, knowing that 8 + 7 = 15 allows one to easily add 28 + 7. Or, there is a similarity in the subtractions 10 − 4, 50 − 4, and 80 − 4. This is what good number sense is all about: being able to recognize these patterns and structures, and to use them to do calculations in one’s head.
- (MP.4) Several lessons in the chapter ask the child to write an equation (a calculation) for a situation in a word problem. This is the very beginning stage of modeling with mathematics: applying mathematics to solve problems arising in everyday life.

Chapter 9: Graphs

This is a short chapter, focusing on bar graphs. There is also one optional lesson on tally marks. In Kindergarten, children have sorted items into categories, and sorted the categories by count, preparing them for what we do here in first grade. Now, the goals are that the child is able to.

- organize data into three categories;
- make a bar graph (or a tally) to represent the data;
- ask and answer simple questions about the data and the graph.

The lessons are fairly simple and introductory, helping children to get started organizing data and understanding how we can represent data with a graph.

What we are coming from

In Kindergarten, children have classified objects into given categories, counted the numbers of objects in each category and sorted the categories by count. This has prepared them for making bar graphs here in first grade.

What we are going towards

In second grade, students work with both picture graphs (pictographs) and bar graphs, with single-unit scale when the data has up to four categories. Then in third grade, students continue with *scaled* bar graphs and pictographs; in other words, each picture in the pictograph or each "block" in the bar graph represents more than one thing.

Relevant 1st grade standard

1.MD.4 Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.

Chapter 10: Coins

In this last chapter, we study counting coins. The goals are that the student learns to identify and count pennies, nickels, dimes, and quarters, when the amounts are 100 cents at most.

In the first lesson, we start out by counting only dimes and pennies, which is identical to practicing place value with tens and ones. The same lesson introduces the nickel.

Next, we practice counting pennies, nickels, and dimes for two lessons. The following lesson then introduces the quarter. First, we practice counting only quarters and dimes, then quarters and nickels, and lastly all the coins. If counting quarters is difficult for your student, you can delay this topic till second grade.

The Common Core Standards (CCS) do not include anything about money or coins for first grade, so if you are following the CCS precisely, or if time does not allow, you can safely use this content (or some of it) in second grade.

Note 1: If you have the grayscale version of the book, or have printed in grayscale, it is helpful to color the pennies orange before doing the exercises.

Note 2: At the time of this writing, the U.S. has discontinued minting the penny; however it continues in circulation, so we have decided to continue including the penny in the lessons.

What we are coming from

In Math Mammoth Kindergarten, children have counted pennies, nickels, and dimes.

What we are going towards

In second grade, students practice counting coins and solve simple word problems that involve dollar bills, quarters, dimes, nickels, and pennies. Math Mammoth Grade 3 includes counting coins as well, but from third grade onward, the focus shifts to word problems involving money amounts.

Relevant standard

2.MD.8 Solve word problems involving dollar bills, quarters, dimes, nickels, and pennies, using $ and ¢ symbols appropriately. Example: If you have 2 dimes and 3 pennies, how many cents do you have?

Note: If a standard is mentioned in parentheses, it means the lesson contains material that approaches that standard or prepares students for it.