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Foreword

Math Mammoth Grade 2 comprises a complete math curriculum for the second grade mathematics studies. The curriculum meets and exceeds the Common Core standards.

The main areas of study for second grade are:

1. Understanding of the base-ten system within 1000. This includes place value with three-digit numbers, skip-counting in fives, tens, and multiples of hundreds, tens, and ones (within 1000) (chapters 6 and 8);
2. Develop fluency with addition and subtraction, including solving word problems, regrouping in addition, and regrouping in subtraction (chapters 1, 3, 4, and 8);
3. Using standard units of measure (chapter 7);
4. Describing and analyzing shapes (chapter 5).

Additional topics we study are time, money, introduction to multiplication, and bar graphs and picture graphs.

This book, 2-A, covers reading the clock (chapter 2), the basic addition and subtraction facts within 18 (chapter 3), regrouping in addition (chapter 4), and geometry (chapter 5). The rest of the topics are covered in the 2-B student worktext.

Some important points to keep in mind when using the curriculum:

- These two books (parts A and B) are like a “framework”, but you still have a lot of liberty in planning your child’s studies. While addition and subtraction topics are best studied in the order they are presented, feel free to go through the sections on shapes, measurement, clock, and money in any order you like.

This is especially advisable if your child is either “stuck” or is perhaps getting bored with some topic. Sometimes the concept the child was stuck on can become clear after a break from the topic.

- Math Mammoth is mastery-based, which means it concentrates on a few major topics at a time, in order to study them in depth. However, you can still use it in a *spiral* manner, if you prefer. Simply have your child study in 2-3 chapters simultaneously. This type of flexible use of the curriculum enables you to truly individualize the instruction for your child.
- Don’t automatically assign all the exercises. Use your judgment, trying to assign just enough for your child’s needs. You can use the skipped exercises later for review. For most children, I recommend to start out by assigning about half of the available exercises. Adjust as necessary.
- For review, the curriculum includes a worksheet maker (Internet access required), mixed review lessons, additional cumulative review lessons, and the word problems continually require usage of past concepts. Please see more information about review (and other topics) in the FAQ at <https://www.mathmammoth.com/faq-lightblue.php>

I heartily recommend that you view the full user guide for your grade level, available at <https://www.mathmammoth.com/userguides/>

Lastly, you can find free videos matched to the curriculum at <https://www.mathmammoth.com/videos/>

I wish you success in teaching math!

Maria Miller, the author

Chapter 1: Some Old, Some New

Introduction

This chapter contains both some review and some new topics, with the aim of giving children a good start in second grade math.

In the first few lessons, we review adding and subtracting two-digit numbers, and skip-counting using the 100-chart, from first grade. Next, the lesson *Fact Families* reviews the connection between addition and subtraction, and introduces a new strategy for missing subtrahend problems (such as $___ - 5 = 4$). In these problems, the child can *add* to find the missing total. This actually teaches them algebraic thinking.

Then we go on to the “new”, starting with ordinal numbers, which are probably familiar from everyday language. Even and odd numbers are presented in the context of equal sharing: if you can share that many objects evenly (equally), then the number is even. Use manipulatives here if desired.

Then we study doubling and halving. Don’t skip the word problems included in these lessons; they are important. Children need to learn to apply the concepts they have just learned. Also, if a child cannot solve word problems that involve doubling or halving, there is a chance they did not actually learn those concepts.

The last lessons have to do with adding and subtracting whole tens (multiples of ten) *mentally* (e.g. $51 + 30$ or $72 - 40$). Mental math is very important, because it builds number sense: the ability to manipulate numbers flexibly — to take them apart and put them together in various combinations. And number sense is very important: it actually predicts a student’s success later on in algebra.

In this case, adding or subtracting multiples of ten is actually a concept rooted in place value. As long as the child understands place value (tens and ones), these types of problems are very easy. If your child has trouble, it is a sign they perhaps have not grasped place value with two-digit numbers.

Also, don’t forget the free videos matched to the curriculum at <https://www.mathmammoth.com/videos/>.

Pacing Suggestion for Chapter 1

Please add one day to the pacing for the test if you will use it. Note that the lessons in the chapter can take several days to finish. As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 1	page	span	suggested pacing	your pacing
Some Review	10	2 pages	2 days	
The 100-Chart and More Review	12	3 pages	2 days	
Fact Families	15	2 pages	1 day	
Ordinal Numbers	17	2 pages	1 day	
Even and Odd Numbers	19	2 pages	1 day	
Doubling	21	3 pages	2 days	
One-Half	24	2 pages	2 days	
Adding with Whole Tens	26	3 pages	2 days	
Subtracting Whole Tens	29	2 pages	1 day	
Review Chapter 1	31	2 pages	2 days	
Chapter 1 Test (optional)				
TOTALS		23 pages	16 days	

Games and Activities

Shuffle the Order

You need: Ten stuffed animals and a deck of number cards with numbers 1-10. Optionally: make a slide for the stuffed animals to slide down on.

Activity: Arrange the animals standing in a line, as if waiting for their turn to go on a slide. On your turn, draw two cards from the deck of number cards. The cards will act as ordinal numbers. The first card tells you which animal in line you will move, and the second card tells you to which position you move it to. For example, if you get 2 and 8, you will move the *second* animal to the *eighth* position in line.

After ten rounds, all the stuffed animals will go down the slide, *in order*.

Cover my Double

You need: One dice, two distinct kind of markers, such as pennies and dimes, or two kinds of beans. For a game board, draw a 4x4 grid with numbers 2, 4, 6, 8, 10, and 12 written multiple times.

Game Play: This is a game for two players. At your turn, throw the dice, and cover the double of what you get from the dice with one of your markers. Then it is the other player's turn. If the squares with your double are already covered, the turn passes to the other player. The winner is the person who first gets three of their markers in a row, or column, or diagonally.

4	2	10	8
8	4	8	12
6	12	10	6
2	6	4	8

Games and Activities at Math Mammoth Practice Zone

Hidden Picture Addition Game

Use a number range of 3 to 19, or some other, to practice addition.

<https://www.mathmammoth.com/practice/mystery-picture>

Hidden Picture Subtraction Game

Choose a number range of 2 to 18, for example, to practice subtraction in this fun game.

<https://www.mathmammoth.com/practice/mystery-picture-subtraction>

Two-Digit Mental Addition - Online Practice

Practice adding one two-digit number and one single-digit number without regrouping in this online quiz.

<https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2p1dnr>

Two-Digit Mental Subtraction - Online Practice

Practice subtracting a single-digit number from a two-digit number without regrouping in this online quiz.

<https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2m1dnr>

“7 Up” Card Game

You will see seven cards dealt face up. Simply choose any two cards that make 10 (or your chosen sum) to discard. When there are no cards that make that sum, click the deck to deal more cards. For this chapter, choose sums of 7, 8, 9, or 10.

<https://www.mathmammoth.com/practice/seven-up>

Skip-count in a 100-chart

Fill in numbers on a 100-chart in a specific skip-counting pattern. You can choose by which number to skip-count, and also the starting and ending numbers for the grid.

<https://www.mathmammoth.com/practice/skip-count-hundred-chart>

Sample worksheet from
<https://www.mathmammoth.com>

Fact Families

Choose which fact family or families to practice, and the program will give you addition and subtraction problems from those, including with missing numbers.

<https://www.mathmammoth.com/practice/fact-families>

Even and Odd

Sort numbers into even and odd by dragging each kind of number to its own “box” in this simple game.

<https://www.mathmammoth.com/practice/even-or-odd>

Fruity Math: Subtraction

Add a two-digit number and a multiple of ten (such as $57 - 20$). Click the fruit with the correct answer and try to get as many points as you can within two minutes.

https://www.mathmammoth.com/practice/fruity-math#op=subtraction&duration=120&mode=manual&config=21,99x1__1,9x10&allow-neg=0

Fruity Math: Addition

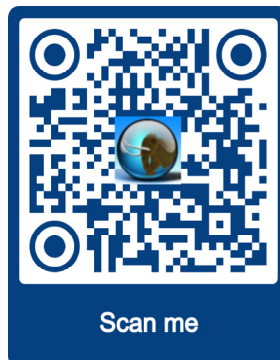
Add a two-digit number and a multiple of ten (such as $26 + 30$). Click the fruit with the correct answer and try to get as many points as you can within two minutes.

https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=1,90x10__11,80x1&max-sum=100

Further Resources on the Internet

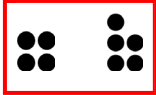
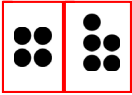
These resources match the topics in this chapter, and offer online practice, online games (occasionally, printable games), and interactive illustrations of math concepts. We heartily recommend you take a look. Many people love using these resources to supplement the bookwork, to illustrate a concept better, and for some fun. Enjoy!

<https://links.mathmammoth.com/gr2ch1>






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Fact Families

<p>When two addition and two subtraction facts use the same numbers, it is called a “<i>fact family</i>.”</p>	 $4 + 5 = 9$ $5 + 4 = 9$ $9 - 5 = 4$ $9 - 4 = 5$ <p>Notice the TOTAL. The subtraction sentences <u>start</u> with the total.</p>	 $4 + 5 = 9$ $5 + 4 = 9$ $9 - 5 = 4$ $9 - 4 = 5$ <p>Notice the PARTS. The two parts make up the total.</p>
<p>Sometimes in a subtraction problem, the <i>total</i> is asked:</p> $\square - 8 = 20$ <p>You know 20 and 8 are the “parts,” and the total is missing. To find the total, just add the “parts”:</p> $20 + 8 = \underline{28}$		

1. Write two addition and two subtraction sentences—a fact family!

<p>a. </p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$	<p>b. </p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$	<p>c. </p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$
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2. Fill in the missing numbers. The four problems form a fact family.

<p>a. $2 + \square = 8$</p> $\square + 2 = 8$ $8 - 2 = \square$ $8 - \square = 2$	<p>b. $\underline{\quad} + \underline{\quad} = 10$</p> $\underline{\quad} + \underline{\quad} = 10$ $10 - 7 = \square$ $10 - \square = 7$	<p>c. $\underline{\quad} + \underline{\quad} = \underline{\quad}$</p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $9 - \square = 6$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$
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3. Write a matching addition for the subtraction. There are two possibilities.

a. $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $8 - 2 = 6$	b. $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $20 - 7 = 13$	c. $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $60 - 20 = 40$
---	---	--

When the first number is missing in a subtraction, it is the TOTAL that is missing.

You can find the TOTAL by adding the two numbers (those are the “parts”).

$$\square - 6 = 2$$

The total is missing. 6 and 2 are the “parts.” So we add them.
 $2 + 6 = 8$. The missing number is 8!

It is like “adding backwards”:

$$\begin{array}{c} \text{Add.} \\ \leftarrow + \\ \mathbf{8} - 6 = 2 \end{array}$$

$$\begin{array}{c} \text{Add.} \\ \leftarrow + \\ \mathbf{23} - 3 = 20 \end{array}$$

4. The total is missing from the subtraction sentence. Solve.

a. $\square - 5 = 4$	b. $\square - 7 = 2$	c. $\square - 7 = 10$
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5. Find the missing numbers.

a. $\square - 2 = 4$ $\square - 50 = 50$ $\square - 8 = 20$	b. $\square - 7 = 80$ $60 + 4 = \square$ $16 + \square = 20$	c. $9 - \square = 5$ $77 + \square = 78$ $\square - 9 = 60$
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Puzzle Corner

Find the missing numbers. This time adding backwards will NOT work!

a. $50 - \square = 10$

b. $100 - \square = 91$

c. $10 - \square - 2 = 1$

$33 - \square = 31$

$76 - \square = 72$

$9 - \square - 5 = 2$

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Chapter 2: Clock

Introduction

The second chapter of *Math Mammoth Grade 2* deals with reading the clock to the five-minute intervals, and finding simple time intervals. I recommend having on hand an analog clock where the child can turn the hands on the clock.

First we practice telling time in the form of *hours:minutes* (such as 10:20), and then using the colloquial phrases “ten after,” “quarter till,” and so on.

Also studied are simple time intervals, or how much time passes. When practicing these topics, ask the child to move the minute (or hour) hand on an analog clock. The child can initially use a real clock for this, and later just imagine the movement of the clock hand(s) in his or her mind.

The chapter also has one lesson about the calendar. Of course, the calendar and the months are best learned simply in the context of everyday life, as the months pass. Hang a calendar on the wall and instruct your child to look at it every day, and to cross out days as they pass.

You can find several helpful videos that match these lessons at <https://www.mathmammoth.com/videos/>.

If your child benefits from some slight spiraling, or just to keep things more interesting, feel free to mix the lessons in this chapter with the lessons in chapter 3, which is somewhat repetitive and can be more tedious to go through.

Pacing Suggestion for Chapter 2

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 2	page	span	suggested pacing	your pacing
Review—Whole and Half Hours	37	1 page	1 day	
The Minutes	38	3 pages	2 days	
The Minutes, Part 2	41	2 pages	1 day	
Past and Till in Five-Minute Intervals	43	3 pages	2 days	
How Many Hours Pass?	46	2 pages	1 day	
The Calendar: Weekdays and Months	48	3 pages	2 days	
The Calendar: Dates	51	3 pages	2 days	
Review Chapter 2	54	1 page	1 day	
Chapter 2 Test (optional)				
	TOTALS	18 pages	12 days	

Games and Activities

Tell the Time!

You need: An analog clock that allows you to turn the clock hands, or an app that allows you to do so.

In this activity, ask your child or student to turn the clock hands to a specific time (using the five-minute marks). Once they do so, then it is their turn to give you a time that you will set the clock to. You can use random times, and also important, specific times, such as, “We need to leave for the library at 2:45.”

Find the Weekday!

You need: A wall calendar

In this simple activity, ask your child or student to find the weekday of a specific date on the calendar. Once they do so, then it is their turn to tell you what day of the week a certain date falls on. You can use random dates, and also important, specific dates, such as, “What day of the week is your birthday?”

How Many Months?

You need: A wall calendar

In this simple activity, ask your child or student to find how many months it is till someone’s birthday, if right now it is a certain month. For example, let’s say your birthday is in January. Ask, “If right now we’re in June, how many months is it till my birthday?” Take turns, so that the child can ask you similar questions.

Earlier and Later

You need: A wall calendar or a calendar app

Ask your child or student to find the date one or two weeks after or before a certain date. For example, you could ask, “What date is it two weeks before September 6?” Take turns, so that the child will also ask you similar questions.

Months Match

This is a simple activity to practice matching the names of the months to their numbers.

You need: A set of 12 number cards with numbers from 1 to 12 on them. You can use cards from a standard deck if your child understands Jack as 11 and Queen as 12.

Shuffle the cards. Ask the child to turn the cards from the deck one by one, and at each card, say the name of the month that corresponds to that number. For example, if the child gets 7, they should say “July”.

Once the child can go through all 12 cards without any mistakes, give them a small reward.

Games and Activities at Math Mammoth Practice Zone

Telling Time

Practice telling time on an analog clock with this interactive online exercise. Choose “To the nearest five minutes” for this grade level.

<https://www.mathmammoth.com/practice/tell-time>

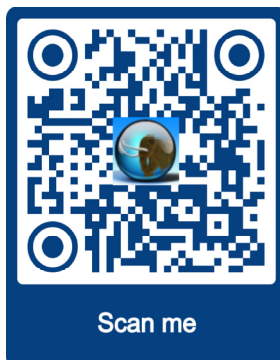
Further Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter, including pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

We heartily recommend you take a look! Many of our customers love using these resources to supplement the bookwork. You can use these resources as you see fit for extra practice, to illustrate a concept better and even just for some fun. Enjoy!

<https://l.mathmammoth.com/gr2ch2>

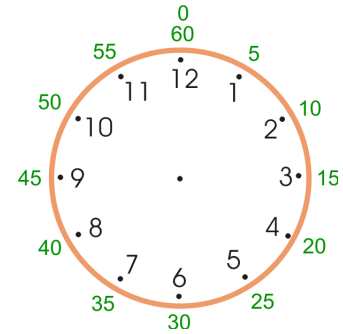


The Minutes

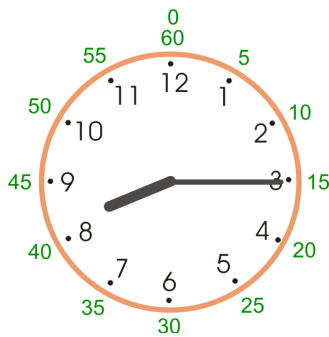
When the hour hand moves from one number to the next (from 1 to 2, or from 6 to 7, etc.), it takes one hour to do that.

In that same one hour of time, the *minute hand* travels **from 0 to 60 minutes**. So one hour is 60 minutes. A half-hour is 30 minutes.

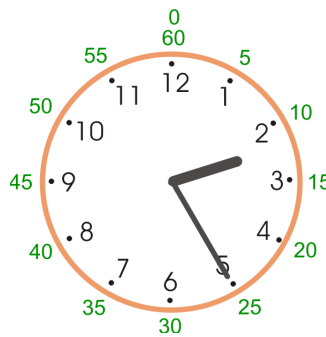
When you read the minute hand, you use the green numbers (marked outside the clock face of the clock on the right). They go by fives, and are not normally marked on clocks. You need to know them. Just skip-count by fives!



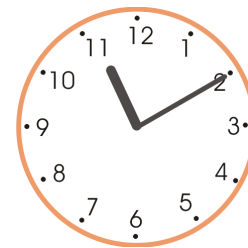
1 hour = 60 minutes.
1/2 hour = 30 minutes.



The hour hand is past 8.
The minute hand is at 15.
The time is 8:15.

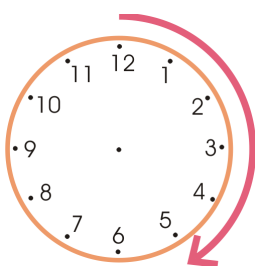


The hour hand is past 2.
The minute hand is at 25.
The time is 2:25.

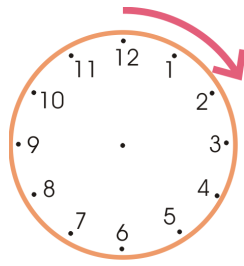


The hour hand is past 11.
The minute hand is at 10.
The time is 11:10.

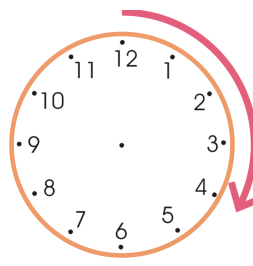
1. The arrow shows how much the minute hand travels. How many minutes pass?



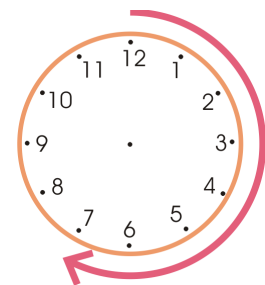
a. _____ minutes



b. _____ minutes





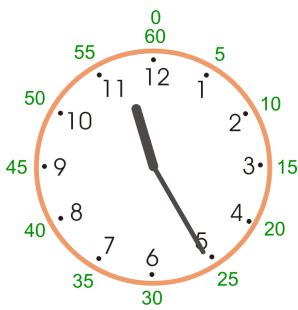
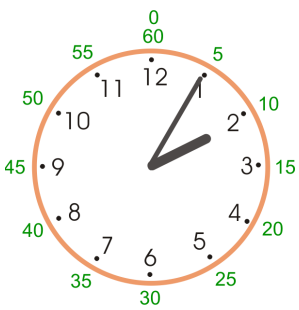
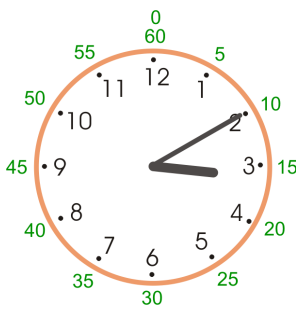
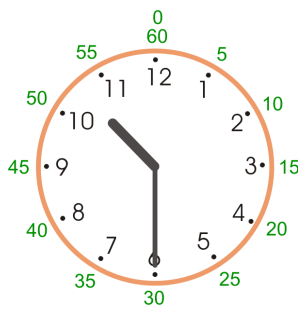


c. _____ minutes

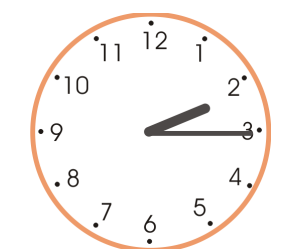
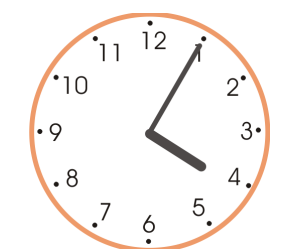
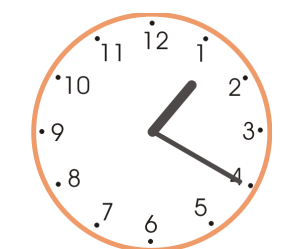
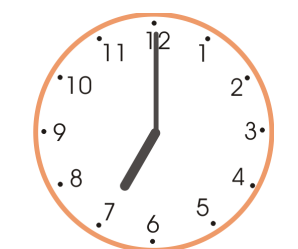
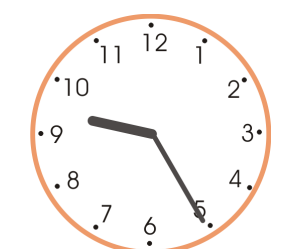
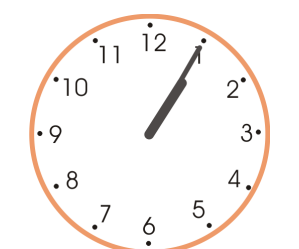
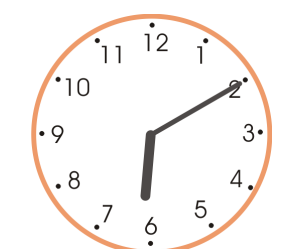
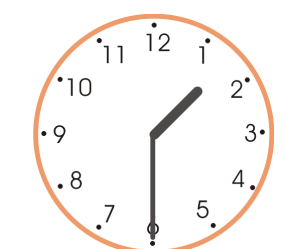


d. _____ minutes





2. Write the time. This special clock shows the numbers for hours *and* for minutes.

 <p>a. _____ : _____</p>	 <p>b. _____ : _____</p>	 <p>c. _____ : _____</p>	 <p>d. _____ : _____</p>
 <p>e. _____ : _____</p>	 <p>f. _____ : _____</p>	 <p>g. _____ : _____</p>	 <p>h. _____ : _____</p>

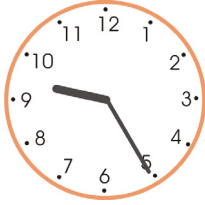
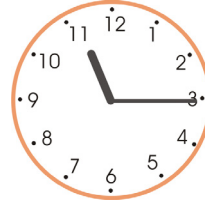
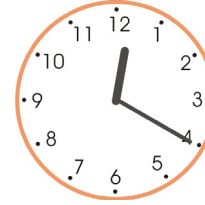
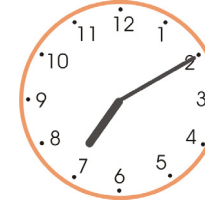
3. Write the time using the normal clock. Remember, the numbers for the minute hand are not shown, and they go by fives!

 <p>a. _____ : _____</p>	 <p>b. _____ : _____</p>	 <p>c. _____ : _____</p>	 <p>d. _____ : _____</p>
 <p>e. _____ : _____</p>	 <p>f. _____ : _____</p>	 <p>g. _____ : _____</p>	 <p>h. _____ : _____</p>


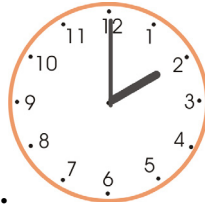
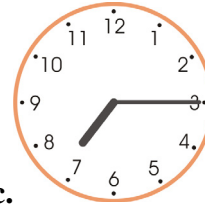
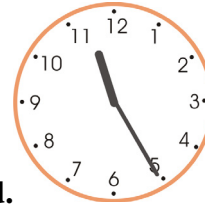

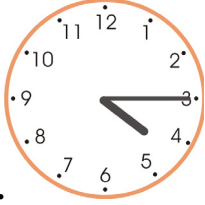
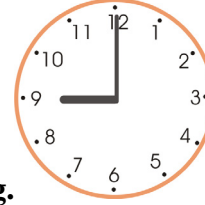

4. Find the clock that shows 11:25 and the clock that shows 11:05.

 <p>a.</p>	 <p>b.</p>	 <p>c.</p>	 <p>d.</p>
--	--	---	--

5. Write the time.

 <p>a. _____ : _____</p>	 <p>b. _____ : _____</p>	 <p>c. _____ : _____</p>	 <p>d. _____ : _____</p>
--	--	---	--

6. Write the time that the clock shows, and the time 5 minutes later. Imagine the minute hand moving one “step” further. You can use your practice clock.

	 <p>a.</p> <p>_____ : _____</p>	 <p>b.</p> <p>_____ : _____</p>	 <p>c.</p> <p>_____ : _____</p>	 <p>d.</p> <p>_____ : _____</p>
5 min. later →	_____ : _____	_____ : _____	_____ : _____	_____ : _____
	 <p>e.</p> <p>_____ : _____</p>	 <p>f.</p> <p>_____ : _____</p>	 <p>g.</p> <p>_____ : _____</p>	 <p>h.</p> <p>_____ : _____</p>
5 min. later →	_____ : _____	_____ : _____	_____ : _____	_____ : _____

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Chapter 3: Addition and Subtraction Facts Within 0-18

Introduction

The third chapter of *Math Mammoth Grade 2* provides lots of practice for learning and memorizing the basic addition and subtraction facts of single-digit numbers with an answer between 10 and 18.

The goal is to memorize the facts, or at least become so fluent with them that an outsider cannot tell if the child remembers the answer or uses some mental math strategy to get the answer.

Some children will accomplish this quicker and need less practice, whereas others will need more practice. Thus, don't assign all the exercises in the curriculum by default. Use your judgment, and try to match the amount of exercises to your child's need. The ones that don't get assigned can be used later for review. You can also use games to reinforce the facts, and in place of some of the exercises in the book (a list of online games is provided below).

Learning addition and subtraction facts is very important for later study. For example, we will soon learn regrouping (carrying/borrowing) in addition and in subtraction, which requires the child to be able to recall all the sums of single-digit numbers and corresponding subtraction facts efficiently and fluently.

We will start the chapter by reviewing how to complete the next whole ten. This concept is very important. For example, what number do you add to 23 to get 30? As an equation, we write: $23 + \underline{\quad} = 30$.

In the next lesson, we study sums that go over ten, doing these sums in two parts. For example, in the sum $9 + 7$, the child first completes 10 by adding $9 + 1$. Then, the child adds the rest, or 6, to 10. Learning this prepares the child for addition facts where the sum is more than 10.

The next lessons, *Adding with 9*, *Adding with 8*, *Adding with 7*, and *Adding with 6*, provide lots of practice for learning and memorizing the basic addition facts. There are 20 such facts:

$9 + 2$ till $9 + 9$: 8 facts
 $8 + 3$ till $8 + 8$: 6 facts
 $7 + 4$ till $7 + 7$: 4 facts
 $6 + 5$ till $6 + 6$: 2 facts

After those lessons, we study subtraction. First, the child subtracts to ten. This means subtracting from 14, 15, 16, etc. so that the answer is 10, for example $16 - \underline{\quad} = 10$. In the next step, we study subtractions with an answer less than 10, such as $16 - 7$. The student practices these by subtracting in two parts: First subtracting to ten, then the rest. For example, $16 - 7$ becomes $16 - 6 - 1$, or $14 - 6$ becomes $14 - 4 - 2$. This is a mental math strategy that can be relied on if the child does not know the answer by heart but it is actually not the ultimate goal.

Memorizing the basic facts is the preferred way, because it frees up the brain's resources to do other things (such as to think on how to solve a word problem, or how to regroup).

The last part of this chapter includes various lessons titled *Number Rainbows* and *Fact Families with....* These give lots of practice and reinforcement for the basic addition and subtraction facts, emphasizing the connection between addition and subtraction as a strategy for subtraction facts. You can find several helpful videos that match these particular lessons at <https://www.mathmammoth.com/videos>, in the section for 2nd grade. The lessons also include many word problems.

This chapter includes lots of repetition, drill, and practice. Therefore, you are welcome to mix the lessons from this chapter with some geometry, place value, clock, or measuring, in order to prevent boredom. For example, the child could study geometry and topics of 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.

Pacing Suggestion for Chapter 3

Please add one day to the pacing for the test if you will use it. Note that the lessons in the chapter can take several days to finish. As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 3	page	span	suggested pacing	your pacing
Review: Completing the Next Whole Ten	59	2 pages	2 days	
Review: Going Over Ten	61	2 pages	1 day	
Adding with 9	63	2 pages	1 day	
Adding with 8	65	2 pages	1 day	
Adding with 7	67	2 pages	1 day	
Adding with 6	69	2 pages	1 day	
Review—Facts with 6, 7, and 8	71	2 pages	2 days	
Subtract to Ten	73	2 pages	1 day	
Difference and How Many More	75	3 pages	2 days	
Number Rainbows—11 and 12 (optional)	78	2 pages	1 day	
Fact Families with 11	80	1 page	1 day	
Fact Families with 12	81	2 pages	1 day	
Number Rainbows—13 and 14 (optional)	83	1 page	1 day	
Fact Families with 13 and 14	84	3 pages	2 days	
Fact Families with 15	87	2 pages	1 day	
Fact Families with 16	89	2 pages	1 day	
Fact Families with 17 and 18	91	2 pages	1 day	
Mixed Review Chapter 3	93	2 pages	2 days	
Review Chapter 3	95	3 pages	1 day	
Chapter 3 Test (optional)				
TOTALS		36 pages	22 days	
with optional content		(39 pages)	(24 days)	

Games and Activities

12 Out (or 11 Out, 13 Out, 14 Out)

You need: A deck of number cards, or regular playing cards. The values of the face cards are Jack = 11, Queen = 12, King = 13.

Preparation: Choose a target sum, such as 12. The game works best for target sums 14 or less. Deal seven cards to each player. Place the rest face down in a pile in the middle of the table.

Game play: At your turn, first take one card from the pile. Then try to find pairs of cards in your hand that add up to 12, and discard any such pairs. Discard the card 12 (queen) also if you have it. If you cannot find any such pairs, ask for any one card you want (such as 7) from the player to your right (as in “Go Fish”). That player, if he has it, must give it, and you will then discard the pair that makes 12. Then it is the next player’s turn. The player who first discards all the cards from his hand is the winner.

Variations:

- * Deal more than seven cards.
- * Instead of 12, players discard cards that add up to 12, 13, or 14.

Addition (or Subtraction) Challenge

You need: A standard deck of playing cards from which you remove the face cards. For the subtraction challenge, include the face cards also (Jack = 11, Queen = 12, King = 13).

Game Play: In each round, each player is dealt two cards face up, and has to calculate their sum or difference (add/subtract). The player with the highest sum or difference gets all the cards from the other players. After enough rounds have been played to use all of the cards, the player with the most cards wins. If two or more players have the same sum, then those players get an additional two cards and use those to resolve the tie.

Number Bonds in the Pond

You need: A standard deck (or several) of playing cards or number cards. The values of the face cards are Jack = 11, Queen = 12, King = 13.

Preparation: Choose a target sum for the game. If the target sum is 12, make a deck of cards consisting of numbers 1 through 11. If the target sum is 11, make a deck of numbers 1-10. And so on. (The deck always consists of numbers that are from 1 through $X - 1$ where X is the target sum.) Place a target number card face up between the players, and spread out the rest of the cards face down, like a pond, between the players.

Game play: At your turn, if you don't have any cards in your hand, take two cards from the pond. If you do, take one card from the pond. Now check if any two cards in your hand add up to the target number. If so, put those cards away to your personal pile. If not, it is the next player's turn. The game ends when there are no more cards in the pond. The winner is the person with the most cards in their personal pile.

Variation: Allow three cards/numbers to be added to reach the target number.

Note: Depending on the number of players, you may need several decks of cards for the pond.

Get Out of My House

You need: A deck of playing cards or number cards from 3 to 10.

Preparation: On a shared piece of paper, draw boxes (houses) numbered from 6 to 20. This works best as a two-player game, and each player needs seven tokens that are distinct from the other player's tokens. Place the deck of cards in the middle, cards face down.

Game play: During a turn, a player takes two cards from the deck, adds them, and then puts their token in a house with fewer than three of the opponent's tokens. If the house contains one or two of the opponent's tokens, those tokens are given back to the opponent and the player says "Get out of my house." The first player to place all their tokens in houses wins.

Variation: Allow subtraction and/or multiplication to be used, along with addition.

This game is adapted from <https://www.earlyfamilymath.org> and published here with permission.

Games and Activities at Math Mammoth Practice Zone

Single-Digit Addition

Simple practice of addition facts with single-digit addends.

<https://www.mathmammoth.com/practice/addition-single-digit#questions=10&toe=18&pt=general>

Sample worksheet from
<https://www.mathmammoth.com>

Hidden Picture Addition Game

Use a number range of 2 to 9 to specifically practice basic addition facts.

<https://www.mathmammoth.com/practice/mystery-picture>

7 Up Card Game

You will see seven cards dealt face up. Simply choose any two cards that make 10 (or your chosen sum) to discard. When there are no cards that make that sum, click the deck to deal more cards. For this chapter, choose sums of 11, 12, 13, and 14.

<https://www.mathmammoth.com/practice/seven-up>

Fact Families

Choose which fact family or families to practice, and the program will give you addition and subtraction problems from those, including with missing numbers. For this chapter, choose fact families with 11, 12, 13, 14, and 15.

<https://www.mathmammoth.com/practice/fact-families>

Mathy's Berry Picking Adventure

Join Mathy, our mammoth mascot, on his berry-picking adventure, and practice your basic addition or subtraction facts!

<https://www.mathmammoth.com/practice/mathy-berries#mode=addition-single&duration=2m>

<https://www.mathmammoth.com/practice/mathy-berries#mode=sub-20&duration=2m>

Bingo

Simply click on the right answer in the grid, and it will be colored green. Once you get five in a row, a column, or diagonally, and bingo, you win! For this chapter, choose Addition (Single-Digit) or Subtraction (Under 20).

<https://www.mathmammoth.com/practice/bingo>

Fruity Math

Click the fruit with the correct answer and try to get as many points as you can within two minutes. The first link below is for addition facts, the second one for subtraction within 0-18.

https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=2,9x1__3,9x1&max-sum=1000

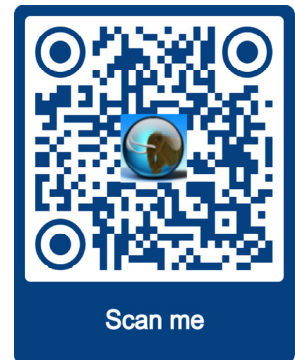
https://www.mathmammoth.com/practice/fruity-math#op=subtraction&duration=30&mode=manual&config=11,18x1__2,9x1&allow-neg=0

Further Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter, including pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

We heartily recommend you take a look! Many of our customers love using these resources to supplement the bookwork. You can use these resources as you see fit for extra practice, to illustrate a concept better and even just for some fun. Enjoy!



<https://l.mathmammoth.com/gr2ch3>

Adding with 8

Imagine that 8 wants to be a 10!
It takes two from the other number
(from 3). So, 8 becomes 10, and
only 1 is left over.

$$8 + 3 = 10 + 1 = 11$$

8 wants to be a 10! So, it takes
two from the other number
(from 5). So, 8 becomes 10,
and 3 are left over.

$$8 + 5 = 10 + 3 = 13$$

Use the list on the right to practice. Don't write the answers there.
Just point to different problems and say the answer aloud.

1. Add. First, circle the ten.

<p>a. $8 + 5$</p> <p>$10 + 3 = \underline{\quad}$</p>	<p>b. $8 + 4$</p> <p>$10 + \underline{\quad} = \underline{\quad}$</p>	<p>c. $8 + \underline{\quad}$</p> <p>$10 + \underline{\quad} = \underline{\quad}$</p>
<p>d. $8 + \underline{\quad} =$</p> <p>$10 + \underline{\quad} = \underline{\quad}$</p>	<p>e. $8 + \underline{\quad} =$</p> <p>$10 + \underline{\quad} = \underline{\quad}$</p>	<p>f. $8 + \underline{\quad} =$</p> <p>$10 + \underline{\quad} = \underline{\quad}$</p>

$8 + 1 =$ <input type="text"/>
$8 + 2 =$ <input type="text"/>
$8 + 3 =$ <input type="text"/>
$8 + 4 =$ <input type="text"/>
$8 + 5 =$ <input type="text"/>
$8 + 6 =$ <input type="text"/>
$8 + 7 =$ <input type="text"/>
$8 + 8 =$ <input type="text"/>
$8 + 9 =$ <input type="text"/>

2. It is good to memorize the doubles, also. Fill in.

$2 + 2 = \underline{\quad}$	$5 + 5 = \underline{\quad}$	$8 + 8 = \underline{\quad}$
$3 + 3 = \underline{\quad}$	$6 + 6 = \underline{\quad}$	$9 + 9 = \underline{\quad}$
$4 + 4 = \underline{\quad}$	$7 + 7 = \underline{\quad}$	$10 + 10 = \underline{\quad}$

Addition facts with eight. Do not write the answers down, but just practice the sums.

$8 + 0 = \square$	$8 + 5 = \square$	$8 + 8 = \square$	$8 + 9 = \square$
$8 + 3 = \square$	$8 + 7 = \square$	$8 + 1 = \square$	$8 + 4 = \square$
$8 + 10 = \square$	$8 + 1 = \square$	$8 + 6 = \square$	$8 + 2 = \square$

3. Add and fill in what is missing.

a. $8 + 4 = \underline{\quad}$ $8 + 6 = \underline{\quad}$	b. $7 + 8 = \underline{\quad}$ $8 + 5 = \underline{\quad}$	c. $3 + 8 = \underline{\quad}$ $8 + 9 = \underline{\quad}$
d. $8 + \underline{\quad} = 13$ $8 + \underline{\quad} = 15$	e. $8 + \underline{\quad} = 12$ $8 + \underline{\quad} = 16$	f. $\underline{\quad} + 8 = 11$ $\underline{\quad} + 8 = 14$

4. a. Jenny ate 8 strawberries, and Jack ate 5 more than what Jenny did.

How many strawberries did Jack eat?

b. Ashley is 13 years old, and Maryann is 5.

How many years older is Ashley than Maryann?

5. Find the patterns and continue them.

a. $8 + 2 = \underline{\quad}$ $8 + 4 = \underline{\quad}$ $8 + 6 = \underline{\quad}$ $8 + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	b. $18 + 2 = \underline{\quad}$ $18 + 4 = \underline{\quad}$ $18 + 6 = \underline{\quad}$ $18 + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$	c. $\frac{1}{2}$ of 0 is $\underline{\quad}$. $\frac{1}{2}$ of 2 is $\underline{\quad}$. $\frac{1}{2}$ of 4 is $\underline{\quad}$. $\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$. $\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$. $\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$. $\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$.
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Chapter 4: Regrouping in Addition

Introduction

The fourth chapter of *Math Mammoth Grade 2* deals with addition within 0-100, both mentally and in columns, especially concentrating on regrouping in addition (carrying).

Mental math is important because it builds number sense, and in turn, number sense develops algebraic thinking. We study how to add mentally a two-digit number and a single-digit number (for example $36 + 8$ or $45 + 9$). To do that, children learn to use a “helping problem” composed of the single-digit numbers ($6 + 8$ or $5 + 9$). Just like $6 + 8$ fills the ten and is four more than that, even so, the sum $36 + 8$ fills the *next* whole ten (40), and is four more than that, or 44.

We also study adding two-digit numbers with regrouping (aka “carrying”). This process is illustrated and explained in detail with the help of visual models. You are welcome to also use actual manipulatives if you prefer. The main concept here is that 10 ones make a new ten. This new ten is regrouped with the other tens, and written using a little “1” in the tens column.

In order to prepare for adding three or four two-digit numbers in columns, we practice explicitly how to add three or four single-digit numbers, such as $7 + 8 + 6 + 4$, and the principle of adding in parts (such as $13 + 16$ is the same as $10 + 10$ and $3 + 6$).

The lessons also include lots of word problems, a review of even and odd numbers, and occasional review problems about doubling. Once again, don’t automatically assign all the problems and exercises, but use your judgment.

Pacing Suggestion for Chapter 4

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 1.5 to 2 pages daily or 8 to 10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 4	page	span	suggested pacing	your pacing
Going Over to the Next Ten	101	3 pages	2 days	
Add with Two-Digit Numbers Ending in 9	104	2 pages	1 day	
Add a Two-Digit Number and a Single-Digit Number Mentally	106	2 pages	1 day	
Regrouping with Tens	108	3 pages	2 days	
Add in Columns Practice	111	3 pages	2 days	
Mental Addition of Two-Digit Numbers	114	3 pages	2 days	
Adding Three or Four Numbers Mentally	117	2 pages	1 day	
Adding Three or Four Numbers in Columns.....	119	4 pages	2 days	
Mixed Review Chapter 4	123	2 pages	1 day	
Review Chapter 4	125	2 pages	1 day	
Chapter 4 Test (optional)				
TOTALS		26 pages	15 days	

Games and Activities

Make 100

You need: Two standard decks of playing cards from which you remove the face cards and tens, leaving only numbers 1 through 9.

Game Play: In each round, each player is dealt four cards. Each player forms two 2-digit numbers with his four cards, using each card as a digit. For example, if you're dealt 4, 8, 6, and 1, you could make 84 and 16. Or, you could make 41 and 68. The goal is to make these two numbers in such a manner that their sum is as close to 100 as possible. Each player calculates the sum of their numbers mentally. The player with the sum closest to 100 wins that round, and puts all the cards played on that round to his personal pile.

In the case of a tie, the players are dealt four new cards each, and they use those to resolve the tie. After enough rounds have been played to use all of the cards in the deck, the player with the most cards in his personal pile wins.

Variation: Allow players to calculate the sums using pencil and paper. Mental math is much faster, though. (You can always add the tens separately and the ones separately, and add those two sums.)

Simple Dice

You need: five six-sided dice.

The goal of the game is to get the maximum sum from the five dice. The game practices mental addition of several small numbers.

Game play: At your turn, roll the five dice. You have to leave at least one of the dice (hold it), but you may reroll up to four of them. Again, you have to hold at least one dice, and you can reroll the rest. After these three rolls, your turn is over. Calculate the sum of your dice. This is then written down as your score for this turn.

After a set number of turns (such as five), each player calculates their total score of all the rounds. The player with the highest total wins.

One is IN

This is a variation of the above game, Simple Dice. It adds in one additional rule, and that is why I recommend that you first play the Simple Dice game with your child or students, so they learn the basic idea of the game.

You need: five 6-sided dice

The goal of the game is to get the maximum sum from the five dice. One of the dice has to show 1, for you to score at all.

Game play: At your turn, roll the five dice. You have to leave at least one of the dice (hold it), but you may reroll up to four of them. Again, you have to hold at least one dice, and you can reroll the rest. After four such rolls, your turn is over. If at least one of your dice shows 1, calculate the sum of your dice. This is then written down as your score for this turn. If none of your dice show 1, you do not score anything.

After a set number of turns (such as five), each player calculates their total score of all the rounds. The player with the highest total wins.

Games and Activities at Math Mammoth Practice Zone

Two-Digit Addition with Mental Math

Simple online practice of adding two-digit numbers using mental math.

- Add a two-digit and a single-digit number:
<https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2p1dwr>
- Add two 2-digit numbers, no regrouping:
<https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2p2dnr>
- Add two 2-digit numbers, with regrouping:
<https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2p2dwr>

Hidden Picture Addition Game

Add two-digit numbers and reveal a hidden picture.

<https://www.mathmammoth.com/practice/mystery-picture#min=11&max=99>

Mathy's Berry Picking Adventure

The first link practices adding a two-digit and a single-digit number (e.g. $45 + 7$). The second link practices mentally adding two 2-digit numbers (e.g. $34 + 26$).

- <https://www.mathmammoth.com/practice/mathy-berries#mode=addition-both&duration=2m>
- <https://www.mathmammoth.com/practice/mathy-berries#mode=addition-double&duration=2m>

Bingo

For this chapter, choose Addition (Two-Digit) to practice mental addition of two-digit numbers.

<https://www.mathmammoth.com/practice/bingo>

Fruity Math

Click the fruit with the correct answer and try to get as many points as you can within two minutes.

- Add a two-digit number and nine:
https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=12,89x1__9,9x1&max-sum=200
- Add a two-digit and a single-digit number:
https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=13,89x1__3,9x1&max-sum=200
- Add two 2-digit numbers:
https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=11,89x1__11,99x1&max-sum=125
- Start with single-digit additions, and then advance through levels with increasingly harder sums:
<https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=levels&start-level=2>

Make number sentences

Drag two flowers to the empty slots to make the given sum, practicing two-digit mental addition.

<https://www.mathmammoth.com/practice/number-sentences#questions=5&types=add-11-80>

Color-Grid Game — Vertical Addition Practice

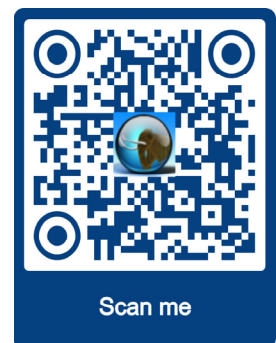
Solve 12 problems of adding two-digit numbers in columns.

https://www.mathmammoth.com/practice/vertical-addition#max=99&questions=4*3&addends=2&max-digits=3

Further Resources on the Internet

These resources match the topics in this chapter, and offer online practice, online games (occasionally, printable games), and interactive illustrations of math concepts. We heartily recommend you take a look. Many people love using these resources to supplement the bookwork, to illustrate a concept better, and for some fun. Enjoy!

<https://l.mathmammoth.com/gr2ch4>

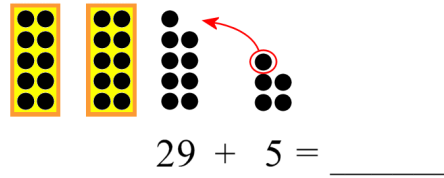


Sample worksheet from
<https://www.mathmammoth.com>

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Add with Two-Digit Numbers Ending in 9

Imagine that 29 wants to be 30...
so it “grabs” one from 5.
Then, 29 becomes 30, and 5 becomes 4.
The addition problem is changed to $30 + 4 = 34$.



1. Circle the nine dots and one more dot to form a complete ten. Add.

<p>a. $19 + 5 = \underline{\hspace{2cm}}$</p>	<p>b. $29 + 7 = \underline{\hspace{2cm}}$</p>	<p>c. $49 + 5 = \underline{\hspace{2cm}}$</p>
<p>d. $29 + 8 = \underline{\hspace{2cm}}$</p>	<p>e. $39 + 6 = \underline{\hspace{2cm}}$</p>	<p>f. $49 + 9 = \underline{\hspace{2cm}}$</p>

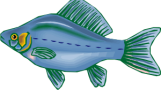



2. Add. For each problem, write a helping problem using the “ones” from the first problem.

a. $19 + 7 = \underline{\hspace{2cm}}$ <u>9</u> + <u>7</u> = _____	b. $49 + 3 = \underline{\hspace{2cm}}$ _____ + _____ = _____	c. $39 + 4 = \underline{\hspace{2cm}}$ _____ + _____ = _____
---	---	---

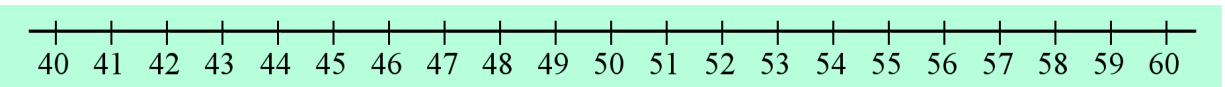
3. Add. Compare the problems.

a. $9 + 3 = \underline{\hspace{2cm}}$ $19 + 3 = \underline{\hspace{2cm}}$	b. $9 + 6 = \underline{\hspace{2cm}}$ $39 + 6 = \underline{\hspace{2cm}}$	c. $9 + 4 = \underline{\hspace{2cm}}$ $49 + 4 = \underline{\hspace{2cm}}$
d. $9 + 7 = \underline{\hspace{2cm}}$ $39 + 7 = \underline{\hspace{2cm}}$ $29 + 7 = \underline{\hspace{2cm}}$	e. $9 + 9 = \underline{\hspace{2cm}}$ $69 + 9 = \underline{\hspace{2cm}}$ $79 + 9 = \underline{\hspace{2cm}}$	f. $9 + 5 = \underline{\hspace{2cm}}$ $19 + 5 = \underline{\hspace{2cm}}$ $59 + 5 = \underline{\hspace{2cm}}$

4. These problems review the basic facts with 9 and 8. By this time you should already remember these addition facts. Try to remember what number will fit without counting.








a. 	b. 	c. 	d. 
$14 - 9 = \underline{\quad}$	$4 + 9 = \underline{\quad}$	$15 - \underline{\quad} = 8$	$7 + 8 = \underline{\quad}$
$15 - 9 = \underline{\quad}$	$8 + 9 = \underline{\quad}$	$17 - \underline{\quad} = 8$	$5 + 8 = \underline{\quad}$
$13 - 9 = \underline{\quad}$	$5 + 9 = \underline{\quad}$	$12 - \underline{\quad} = 8$	$6 + 8 = \underline{\quad}$
$18 - 9 = \underline{\quad}$	$6 + 9 = \underline{\quad}$	$14 - \underline{\quad} = 8$	$3 + 8 = \underline{\quad}$
$17 - 9 = \underline{\quad}$	$9 + 9 = \underline{\quad}$	$13 - \underline{\quad} = 8$	$9 + 8 = \underline{\quad}$
$16 - 9 = \underline{\quad}$	$7 + 9 = \underline{\quad}$	$16 - \underline{\quad} = 8$	$4 + 8 = \underline{\quad}$








5. Find the difference of numbers. The number line can help.



a. Difference between 41 and 53 $\underline{\quad}$	b. Difference between 60 and 46 $\underline{\quad}$	c. Difference between 59 and 48 $\underline{\quad}$
---	---	---

6. Find the patterns and continue them!

a.	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>
							
	0	1	3	6	10	$\underline{\quad}$	$\underline{\quad}$

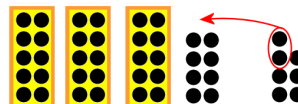
b.	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>	$+$ <input type="text"/>
							
	$\underline{\quad}$	$\underline{\quad}$	$\underline{\quad}$	$\underline{\quad}$	$\underline{\quad}$	44	48
	$\underline{\quad}$	$\underline{\quad}$	$\underline{\quad}$	$\underline{\quad}$	$\underline{\quad}$	52	56

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Add a Two-Digit Number and a Single-Digit Number Mentally

Imagine that 38 wants to be 40, so it “grabs” two from 7. Then, 38 becomes 40, and 7 becomes 5.

The addition problem is changed to $40 + 5 = 45$.

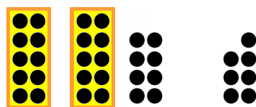


$$38 + 7 = \underline{\quad}$$

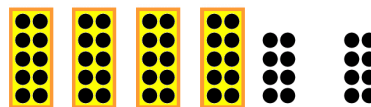
1. Circle the eight dots and two more dots to form a complete ten. Add.



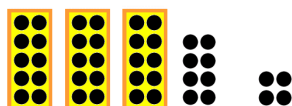
a. $18 + 6 = \underline{\quad}$



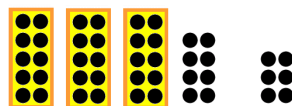
b. $28 + 7 = \underline{\quad}$



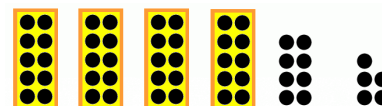
c. $48 + 8 = \underline{\quad}$



d. $38 + 4 = \underline{\quad}$



e. $38 + 6 = \underline{\quad}$



f. $48 + 5 = \underline{\quad}$

2. Add. Think of the trick explained above.

a. $18 + 7 = \underline{\quad}$

b. $38 + 6 = \underline{\quad}$

c. $58 + 5 = \underline{\quad}$

3. Add. Compare the problems. What is similar about the problems in each box?

a. $8 + 3 = \underline{\quad}$

b. $8 + 6 = \underline{\quad}$

c. $8 + 4 = \underline{\quad}$

$18 + 3 = \underline{\quad}$

$38 + 6 = \underline{\quad}$

$78 + 4 = \underline{\quad}$

d. $8 + 2 = \underline{\quad}$

e. $8 + 9 = \underline{\quad}$

f. $8 + 5 = \underline{\quad}$

$38 + 2 = \underline{\quad}$

$68 + 9 = \underline{\quad}$

$18 + 5 = \underline{\quad}$

$28 + 2 = \underline{\quad}$

$78 + 9 = \underline{\quad}$

$58 + 5 = \underline{\quad}$

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Foreword

Math Mammoth Grade 2 comprises a complete math curriculum for the second grade mathematics studies. The curriculum meets and exceeds the Common Core standards.

The main areas of study for second grade are:

1. Understanding of the base-ten system within 1000. This includes place value with three-digit numbers, skip-counting in fives, tens, and multiples of hundreds, tens, and ones (within 1000) (chapters 6 and 8);
2. Develop fluency with addition and subtraction, including solving word problems, regrouping in addition, and regrouping in subtraction (chapters 1, 3, 4, and 8);
3. Using standard units of measure (chapter 7);
4. Describing and analyzing shapes (chapter 5).

Additional topics we study are time, money, introduction to multiplication, and bar graphs and picture graphs.

This book, 2-B, covers three-digit numbers (chapter 6), measuring (chapter 7), regrouping in addition and subtraction (chapter 8), counting coins (chapter 9), and an introduction to multiplication (chapter 10). The rest of the topics are covered in the 2-A student worktext.

Some important points to keep in mind when using the curriculum:

- These two books (parts A and B) are like a “framework”, but you still have a lot of liberty in planning your child’s studies. While addition and subtraction topics are best studied in the order they are presented, feel free to go through the sections on shapes, measurement, clock, and money in any order you like.

This is especially advisable if your child is either “stuck” or is perhaps getting bored with some particular topic. Sometimes the concept the child was stuck on can become clear after a break from the topic.

- Math Mammoth is mastery-based, which means it concentrates on a few major topics at a time, in order to study them in depth. However, you can still use it in a *spiral* manner, if you prefer. Simply have your child study in 2-3 chapters simultaneously. This type of flexible use of the curriculum enables you to truly individualize the instruction for your child.
- Don’t automatically assign all the exercises. Use your judgment, trying to assign just enough for your child’s needs. You can use the skipped exercises later for review. For most children, I recommend to start out by assigning about half of the available exercises. Adjust as necessary.
- For review, the curriculum includes a worksheet maker (Internet access required), mixed review lessons, additional cumulative review lessons, and the word problems continually require usage of past concepts. Please see more information about review (and other topics) in the FAQ at <https://www.mathmammoth.com/faq-lightblue.php>

I heartily recommend that you view the full user guide for your grade level, available at <https://www.mathmammoth.com/userguides/>

Lastly, you can find free videos matched to the curriculum at <https://www.mathmammoth.com/videos/>

I wish you success in teaching math!

Maria Miller, the author

Chapter 6: Three-Digit Numbers

Introduction

This sixth chapter of *Math Mammoth Grade 2* deals with numbers up to one thousand and with place value.

The first three lessons provide the basis for understanding three-digit numbers, by using a visual model of hundred-flats, ten-pillars, and one-cubes. If you prefer, you can use manipulatives instead (base ten blocks). Students also place three-digit numbers on the number line, and in the following lesson, *Forming Numbers—and Breaking Them Apart*, practice writing numbers in expanded form.

Next, it is time to study *Skip-Counting by Tens*, and soon also by twos and fives. Following that, students compare and order three-digit numbers.

After this, it is time for some mental math. First, students add and subtract multiples of hundred using mental math (e.g. $200 + 500$). They complete the next hundred (e.g. $260 + \underline{\quad} = 300$), and add and subtract multiples of tens. Along the way, the lessons also present word problems and other types of problems.

The chapter ends with some bar graphs and pictographs, which provide a nice application for the recently learned three-digit numbers.

A friendly reminder: at <https://www.mathmammoth.com/videos/> you will find free videos matching the curriculum (choose 2nd grade). Also, don't automatically assign all the problems and exercises, but use your judgment. Many children can learn these topics perfectly fine by doing about half of the exercises.

Pacing Suggestion for Chapter 6

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 6	page	span	suggested pacing	your pacing
Three-Digit Numbers	10	4 pages	2 days	
Hundreds on the Number Line	14	2 pages	1 day	
Forming Numbers—and Breaking Them Apart	16	2 pages	1 day	
Skip-Counting by Tens	18	3 pages	1 day	
More Skip-Counting	21	2 pages	1 day	
Which Number Is Greater?	23	3 pages	2 days	
Comparing Numbers and Some Review	26	3 pages	2 days	
Add and Subtract Whole Hundreds	29	2 pages	1 day	
Practice with Whole Hundreds	31	3 pages	2 days	
Completing the Next Hundred	34	3 pages	2 days	
Adding Whole Tens	37	3 pages	1 day	
Subtract Whole Tens	40	3 pages	2 days	
Patterns and Problems	43	3 pages	2 days	
Bar Graphs and Pictographs	46	4 pages	2 days	
Mixed Review Chapter 6	50	2 pages	1 day	
Review Chapter 6	52	3 pages	2 days	
Chapter 6 Test (optional)				
TOTALS		45 pages	25 days	

Games and Activities

Get Closest

You need: A deck of number cards from 0 through 9. (Standard playing cards work if you make, say, the queen to be zero. Or, play with numbers 1-9.)

Write the numbers and blank lines for digits on a blank paper as shown on the right.

Game play: One of the players, or the teacher, will randomly pick a card from the deck (and put it back in after it is used). Both players must use that number somewhere in the spaces that haven't been filled in yet.

Player 1	Target	Player 2
— —	50	— —
— — —	100	— — —
— — —	250	— — —
— — —	500	— — —

Repeat until all the spaces are filled. Then the players' values are compared to each of the target numbers. Whichever player gets closest to each target number gets a point, with both players getting a point if they are equally close. Whoever has the most points wins.

- Variations:**
1. Change the target numbers.
 2. Score the game by summing up the errors of each player. The player with the smallest score wins.
 3. Give each player one empty slot where they can discard a number (not use it at all).

This game is adapted from <https://www.earlyfamilymath.org> and published here with permission.

Build Your Sum

This game is presented in several stages or variations, each more challenging than the previous.

You need: A standard deck (or several) of playing cards or number cards from which you remove all face cards and 10s, leaving only numbers from 1 through 9.

Game play:

Stage 1: On each round, each player is dealt five cards. Your task is to form one 3-digit number and one 2-digit number using those five cards, and then to add the numbers you formed. You will also flip two of the cards of your choice face down, and those digits become zeros. In other words, you will only use three of the five cards as digits from 1 to 9, and two zeros, to form the 3-digit number and the 2-digit number. For example, you might be dealt 4, 6, 8, 6, and 3, and you could form $480 + 60$ or $604 + 30$.

If the player says the correct sum, they get to put those five cards to their personal pile.

The game ends when the main deck of cards is exhausted. The winner is the player with the most cards in their personal pile.

Stage 2: The goal is to form a sum that is as large as possible.

Stage 3: The goal is to form a sum that is as close to 500 as possible.

Stage 4: Each player is dealt six cards. They form two 3-digit numbers from those, again flipping two cards face down to become zeros. The goal is to make a sum that is a multiple of 100 (e.g. 200, 300, 400, etc.).

Fill in the Blanks Comparison

You need: A deck of playing cards or number cards with the numbers 1 through 9.

Game play: Deal three cards to each player, face down. The goal is to make the largest possible three-digit number using the cards. First, each player turns over *one* card and decides whether that card will be the hundreds, tens, or ones digit of their number.

Then, each player turns over one more card and decides which digit that card will be. Lastly, each player turns over the last card and uses that to fill the remaining place. The player with the largest number wins.

Variation: Play so that the smallest number wins.

This game from <https://www.earlyfamilymath.org> is published here with permission.

Games and Activities at Math Mammoth Practice Zone

Place value practice 1

Find the part that is missing from the expanded form of the number.

<https://www.mathmammoth.com/practice/place-value#questions=10&max-digits=4&mode=1>

Place value practice 2

Write the number when it is given in expanded form (as a sum).

<https://www.mathmammoth.com/practice/place-value#questions=10&max-digits=4&mode=2>

Beach Comparisons

Choose the symbol $>$, $<$, or $=$ to compare two 3-digit numbers.

<https://www.mathmammoth.com/practice/beach-comparisons#questions=9&range=101-999&mode=1>

Order numbers

Order four 3-digit numbers from the smallest to the greatest.

<https://www.mathmammoth.com/practice/order-numbers#questions=5&digits=3&baskets=4>

Plot numbers on the number line

Drag the dot to the correct place on the number line. There are two modes for this activity:

(1) The number lines have a lot of tick marks.

<https://www.mathmammoth.com/practice/number-line#questions=5&mode=normal&sign=positive&numberRange=4>

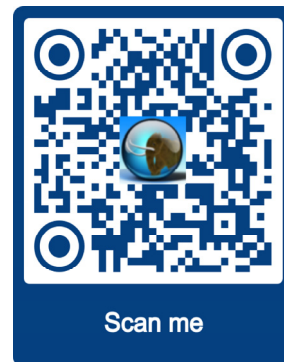
(2) The number lines have few tick marks and you need to estimate where to place the dot.

<https://www.mathmammoth.com/practice/number-line#questions=5&mode=estimation&sign=positive&numberRange=4>

Further Resources on the Internet

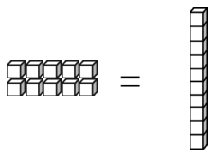
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<https://l.mathmammoth.com/gr2ch6>



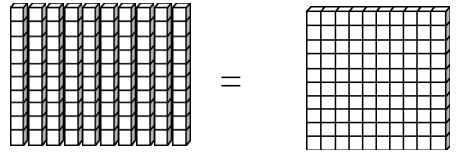
Three-Digit Numbers

Ten ones make a ten:



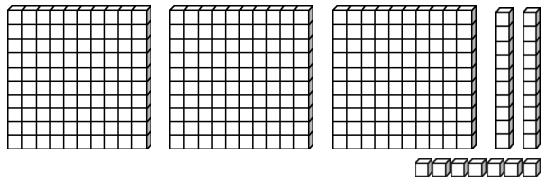
10 ones = 10

Ten ten-pillars make ONE HUNDRED:



10 tens = 100

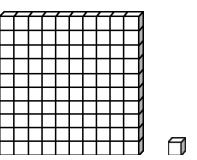
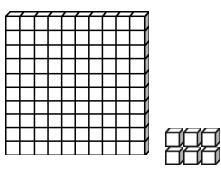
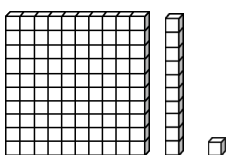
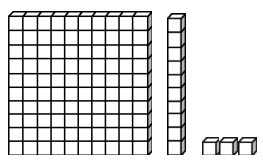
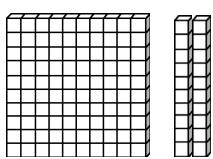
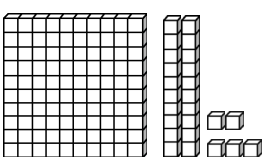
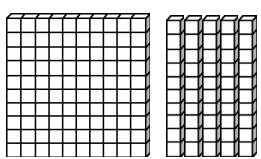
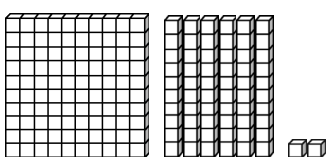
Write hundreds, tens, and ones in their own columns:



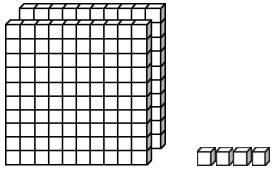
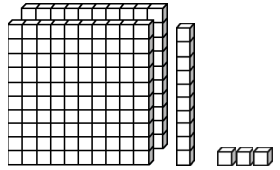
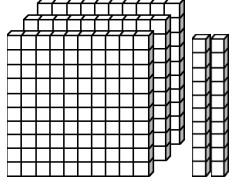
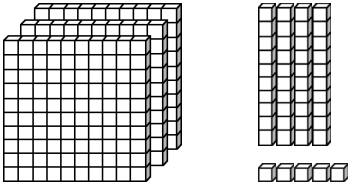
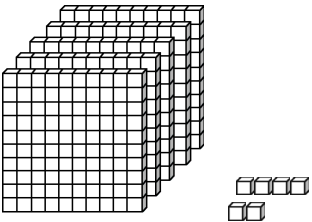
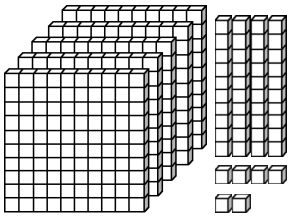
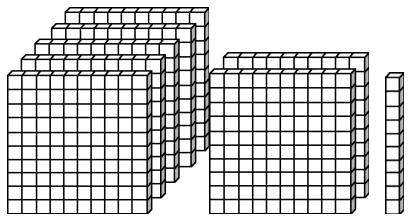
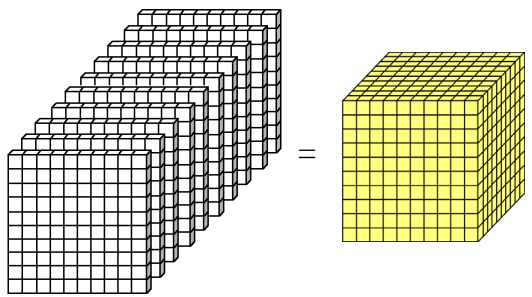
hundreds	tens	ones
3	2	7

three hundred twenty-seven

1. Count the ones, tens, and hundreds, and fill in the missing parts.

<p>a. one hundred one</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td>1</td> <td>0</td> <td>1</td> </tr> </table>	1	0	1	<p>b. one hundred six</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				<p>c. one hundred eleven</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td>1</td> <td>1</td> <td>1</td> </tr> </table>	1	1	1	<p>d. one hundred thirteen</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>			
1	0	1													
1	1	1													
<p>e. one hundred twenty</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				<p>f. one hundred twenty-five</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				<p>g. one hundred fifty</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>				<p>h. one hundred sixty-two</p>  <p>hundreds tens ones</p> <table border="1"> <tr> <td></td> <td></td> <td></td> </tr> </table>			

2. Count the ones, tens, and hundreds, and fill in the missing parts.

<p>a. <u>two hundred</u></p> <p style="text-align: center;"><u>four</u></p>  <p style="text-align: center;">hundreds tens ones</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;">2</td> <td style="width: 33px; height: 33px;">0</td> <td style="width: 33px; height: 33px;">4</td> </tr> </table>	2	0	4	<p>b. <u>two hundred</u></p> <p style="text-align: center;"><u>thirteen</u></p>  <p style="text-align: center;">hundreds tens ones</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> </tr> </table>				<p>c. _____</p> <p>_____</p>  <p style="text-align: center;">hundreds tens ones</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> </tr> </table>			
2	0	4									
<p>d. _____</p> <p>_____</p>  <p style="text-align: center;">H T O</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> </tr> </table>				<p>e. _____</p> <p>_____</p>  <p style="text-align: center;">H T O</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> </tr> </table>				<p>f. _____</p> <p>_____</p>  <p style="text-align: center;">H T O</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> </tr> </table>			
<p>g. _____</p>  <p style="text-align: center;">H T O</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> <td style="width: 33px; height: 33px;"></td> </tr> </table>				<p>h. <u>Ten hundreds = One thousand</u></p>  <p style="text-align: center;">Th H T O</p> <table border="1" style="margin-left: auto; margin-right: auto; text-align: center;"> <tr> <td style="width: 33px; height: 33px;">1</td> <td style="width: 33px; height: 33px;">0</td> <td style="width: 33px; height: 33px;">0</td> <td style="width: 33px; height: 33px;">0</td> </tr> </table>	1	0	0	0			
1	0	0	0								

3. Write a sum of the hundreds, tens, and ones shown in the picture.
Also write the number.

a.

_____ + _____ + _____

H T O

--	--	--

b.

_____ + _____ + _____

H T O

--	--	--

c.

_____ + _____ + _____

H T O

--	--	--

d.

_____ + _____ + _____

H T O

--	--	--

Notice: There are NO ones.
Write a zero for ones in the sum.

e.

_____ + _____ + 0

H T O

--	--	--

Notice: There are NO tens.
Write a zero for tens in the sum.

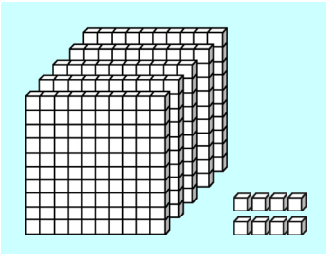
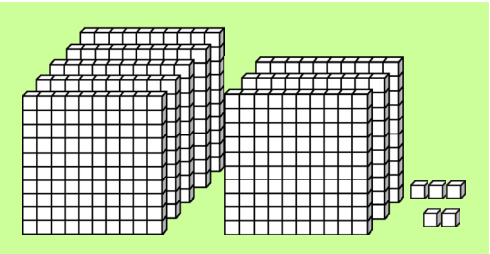
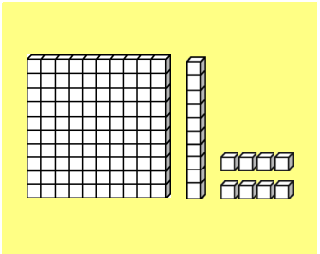
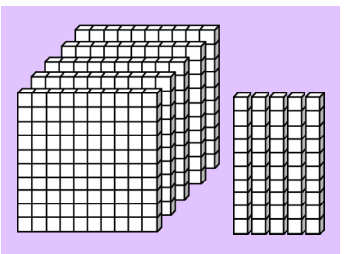
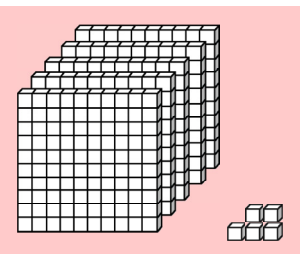
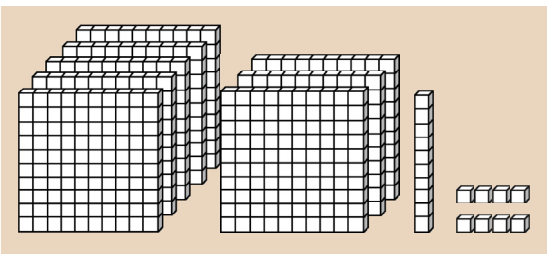
f.

_____ + 0 + _____



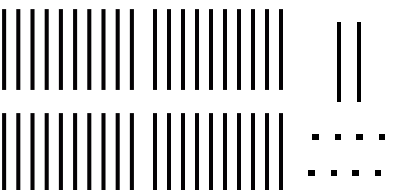
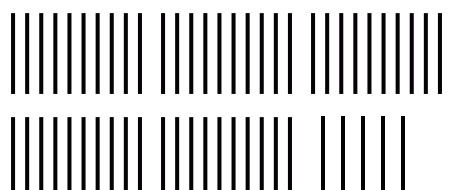
H T O

--	--	--

4. Match the numbers, number names, and the sums to the correct pictures.

118	505	818	550	508	805
					
eight hundred five	five hundred fifty	one hundred eighteen	$500 + 8$	$500 + 5$	$800 + 10 + 8$

5. The dots are ones, the pillars are tens. Group together 10 ten-pillars to make a hundred.

<p>a. </p> <p style="text-align: center;"><u>235</u></p>	<p>b. </p> <p style="text-align: center;">_____</p>
<p>c. </p> <p style="text-align: center;">_____</p>	<p>d. </p> <p style="text-align: center;">_____</p>

How many tens are in a thousand?

Fuzzle Corner

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Patterns and Problems

1. Three children played a card game where you get points for the cards left in your hand. The person who has the least points at the end of the game is the winner. The table shows the point count at a certain time in the game:

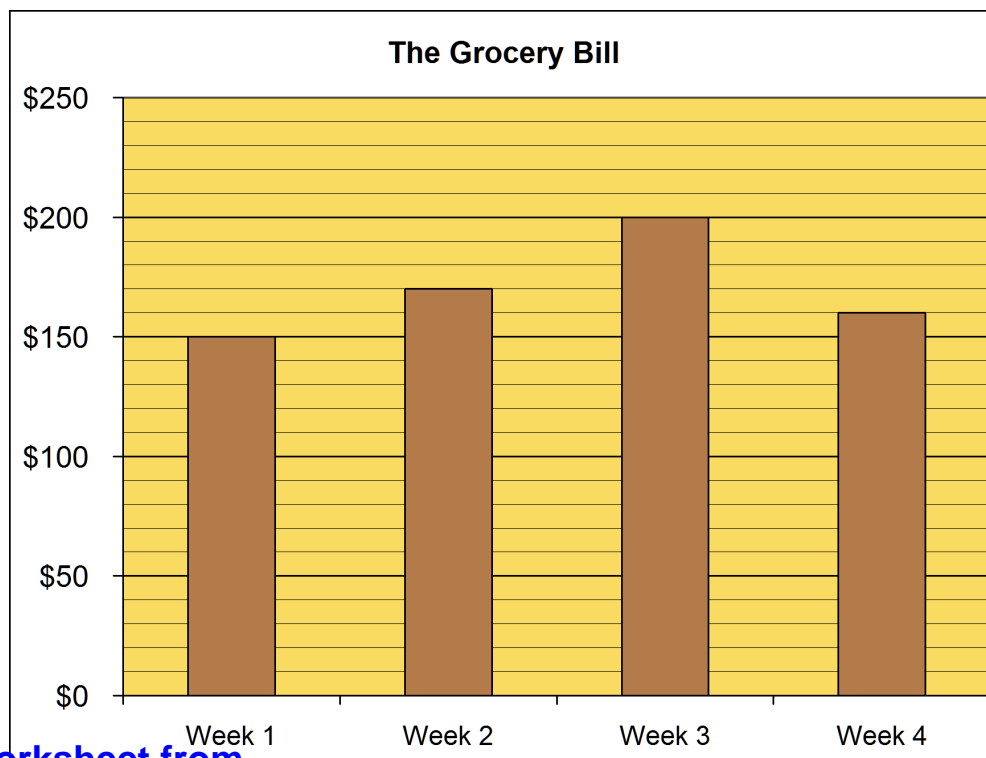
Then, Dan got 100 more points and Bill got 30 more points (Jim got none).

Add those to their point counts and write the new point counts in the grid.

The game ended now. Who won?

Jim	Dan	Bill
540	270	330

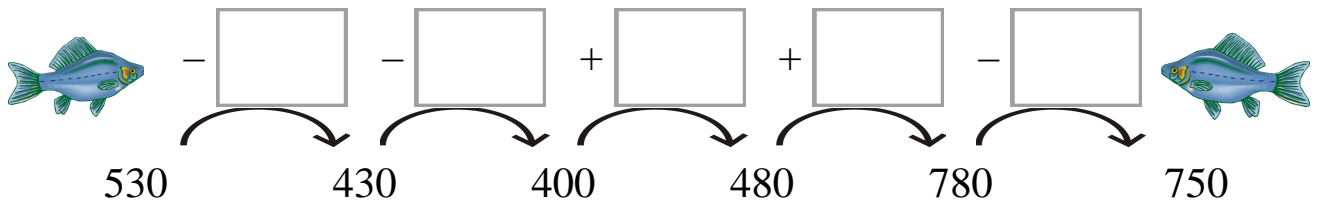
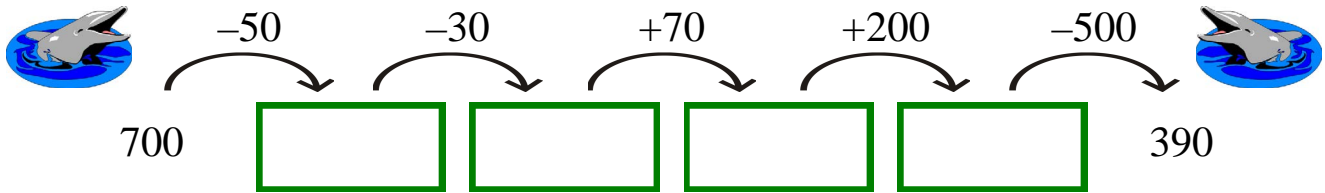
2. The bar graph shows how much money the Riley family spent for groceries in four different weeks.
- Mark above each bar how much they spent for groceries in dollars.
 - How much more did they pay for week 3 than for week 4?
 - How much more did they pay for week 2 than for week 1?



3. Count by 20s, and fill in the grid.

520	540	560		
620				
820				
				1000

4. Fill in.



5. Continue the patterns!

a. $590 - 60 = \underline{\hspace{2cm}}$

$590 - 70 = \underline{\hspace{2cm}}$

$590 - 80 = \underline{\hspace{2cm}}$

$590 - \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

$590 - \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

$590 - \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

b. $770 + 10 = \underline{\hspace{2cm}}$

$770 + 20 = \underline{\hspace{2cm}}$

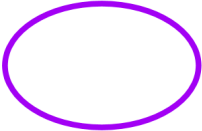
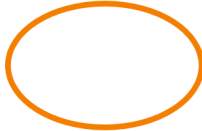
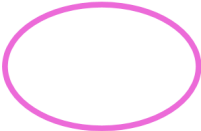
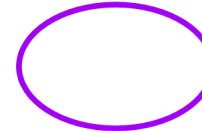
$770 + 30 = \underline{\hspace{2cm}}$


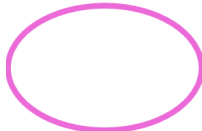
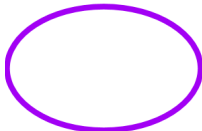

$770 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

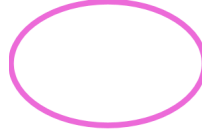
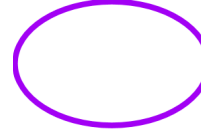

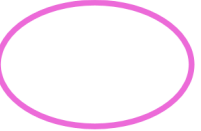
$770 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

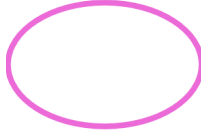
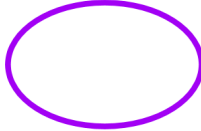

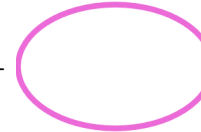
$770 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

6. Find what number goes in the oval.

Subtractions where the TOTAL is missing:	a.  - 60 = 220	b.  - 80 = 510
	c.  - 500 = 100	d.  - 310 = 60

e. 450 +  = 750	f. 716 +  = 776	"How many more" additions
g. 530 +  = 590	h. 637 +  = 697	

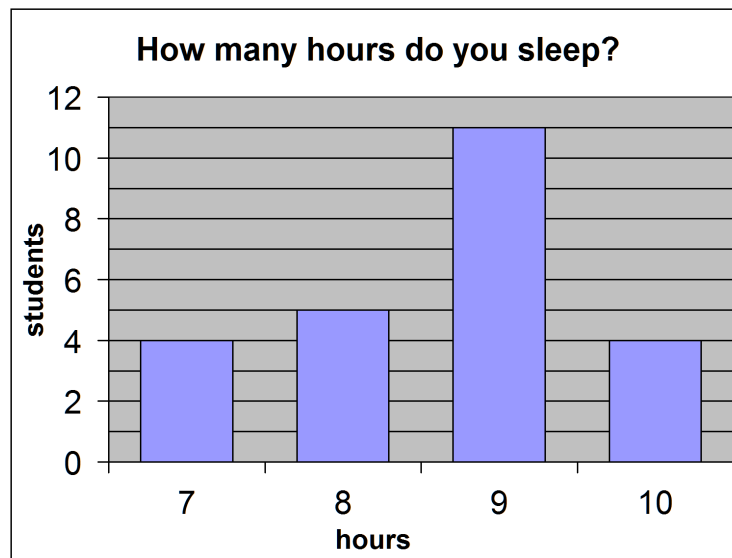
What was subtracted is missing:	i. 1000 -  = 700	j. 740 -  = 40
	k. 667 -  = 607	l. 999 -  = 299


Find what number goes into the oval!		Puzzle Corner
a. 980 - 200 -  = 80	b. 784 -  - 40 = 704	
c. 210 + 50 +  = 310	d. 600 +  + 30 = 720	

Bar Graphs and Pictographs

Bar graphs use “bars” or rectangles in them to show some information.

1. This bar graph shows how many hours some second grade students slept last night.



- a. How many students slept 8 hours last night?
- b. How many students slept 10 hours last night?
- c. *How many more* students slept 9 hours than the ones who slept 10 hours?
- d. A school nurse said that children need to sleep well for at least 8 hours. How many students slept *less than* 8 hours last night?
- e. How many students slept *at least* 8 hours last night?
- f. Make a pictograph. Draw ONE sleepy face  to mean 2 students.

	Students
Students who slept less than 8 hours	
Students who slept at least 8 hours	

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Chapter 7: Measuring

Introduction

The seventh chapter of *Math Mammoth Grade 2* covers measuring length and weight. The child measures and estimates length in inches and half-inches, and learns to measure to the nearest half-inch or to the nearest centimeter. The bigger units—feet, miles, meters, and kilometers—are introduced, but in this grade level we do not yet study conversions between the units.

If you have the downloadable version of this book (PDF file), you need to print these lessons as 100%, not “shrink to fit,” “print to fit,” or similar. If you print “shrink to fit,” some exercises about measuring in inches and centimeters will not come out right, but will be “shrunk” compared to reality.

The lessons on measuring weight include several activities to do using a bathroom scales. The goal is to let students become familiar with pounds and kilograms, and have an idea of how many pounds or kilograms some common things weigh.

When it comes to measuring, experience is the best teacher. So, encourage your child to use measuring devices (such as a measuring tape, ruler, and scales), and to “play” with them. In this way, the various measuring units start to become a normal part of his/her life, and will never be forgotten.

The concrete activities we do in second grade are laying an important foundation for familiarizing the children with measuring units. In third grade, the study of measuring turns toward conversions between the different units. In case you wonder about volume, we will study that in third grade and onward.

Pacing Suggestion for Chapter 7

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. See also the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 7	page	span	suggested pacing	your pacing
Measuring to the Nearest Centimeter	57	3 pages	1 day	
Inches and Half-Inches	60	3 pages	1 day	
Some More Measuring	63	3 pages	2 days	
Feet and Miles.....	66	3 pages	2 days	
Meters and Kilometers	69	2 pages	1 day	
Weight in Pounds	71	2 pages	1 day	
Weight in Kilograms	73	2 pages	1 day	
Mixed Review Chapter 7	75	3 pages	2 days	
Review Chapter 7	78	1 page	1 day	
Chapter 7 Test (optional)				
	TOTALS	22 pages	12 days	

Games and Activities

The lessons in this chapter have a lot of hands-on activities. Follow the instructions in the lessons.

Estimation Game

You need: A measuring tape and/or a ruler. Paper and pencil for each player. Before the game, write down a list of lengths, widths, heights, and distances that the players will estimate. For example, you might ask them to estimate the width of a table, the length of a room, the height of someone, etc.

Game play: The game leader announces the length/width/height/distance to estimate. Each player writes down their estimate, including the unit of measure. Then, one of the players measures the distance in question, and the player whose estimate came the closest gets a point.

The winner is the player with most points after a pre-determined number of rounds.

Variations:

1. Play in teams instead of as individuals.
2. Estimate weights (in pounds or kilograms) instead of lengths.
3. Announce a given distance (such as 25 cm), and the task is to find an object with that length, width, or height.

Set the Course!

You need: A measuring tape that measures in feet or meters. Markers to mark distances outside. These could be little flags you can stick in the ground, colorful caps, etc.

Game play: The players can work as one team, several teams, or as individuals. For each round of the game, the game leader announces a target distance to be run, such as 60 ft or 15 m. Each player or team then designs a course with that distance. For example, it could be a square with 15-ft sides, a rectangle with 25 ft and 5 ft sides, a triangle, or a single marker 30 ft away so that you run to it and back.

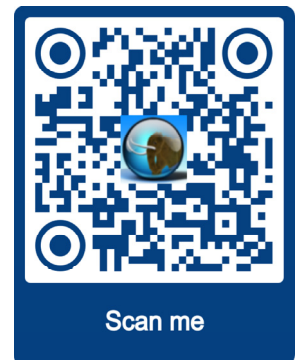
Once the courses are designed, it is time to do the racing. If using teams, this can be a relay race. The player or team that runs the fastest gains a point.

Also, each player/team gets 1-3 points according to how accurately they measured the course (how close the total distance of their course is to the target distance).

Further Resources on the Internet


These resources match the topics in this chapter, and offer online practice, online games (occasionally, printable games), and interactive illustrations of math concepts. We heartily recommend you take a look. Many people love using these resources to supplement the bookwork, to illustrate a concept better, and for some fun. Enjoy!

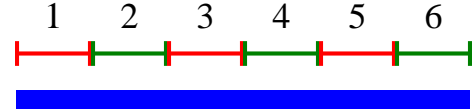
<https://l.mathmammoth.com/gr2ch7>






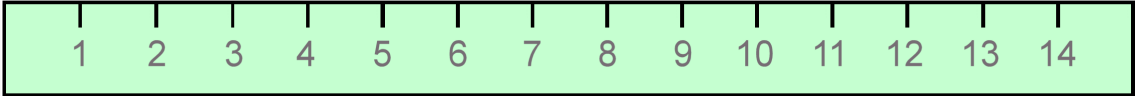

Measuring to the Nearest Centimeter

Remember? We can measure how long things are using *centimeters*.

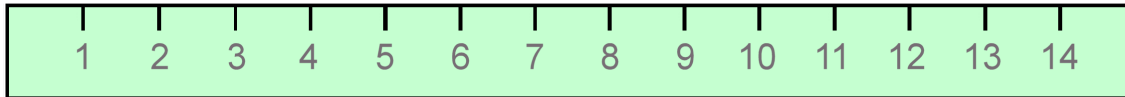
This line is 1 centimeter long: 
 A centimeter is written in short form as "cm."
 The blue line on the right is 6 cm long. →



1. How many centimeters long are these lines?

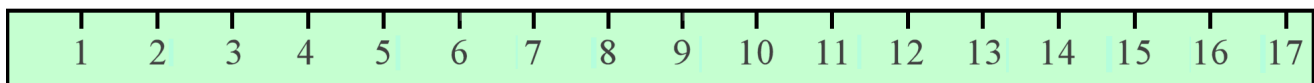
<p>a.  _____ cm</p>	<p>b.  _____ cm</p>
<p>c.  _____ cm</p> 	
<p>d.  _____ cm</p>	

2. Measure the pencils with a centimeter ruler. If you don't have one, you can cut out the one from the bottom of this page. Then answer the questions.



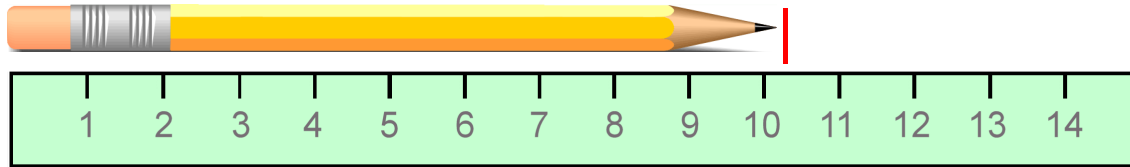
a. How much longer is pencil #1 than pencil #2? _____ cm

b. How much longer is pencil #3 than pencil #2? _____ cm

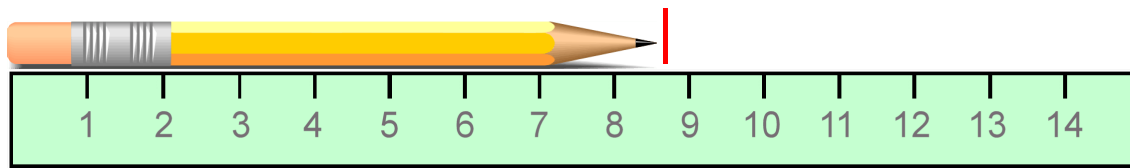


Most things are NOT exactly a certain number of whole centimeters. You can measure them to the nearest centimeter.

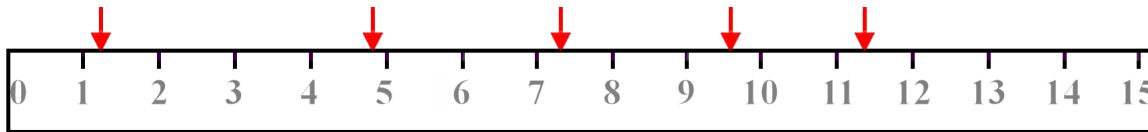
The pencil below is a little over 10 cm long. It is *about 10 cm* long.



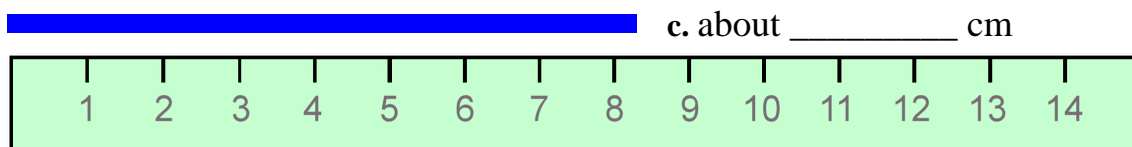
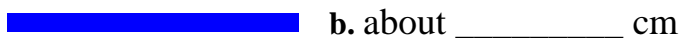
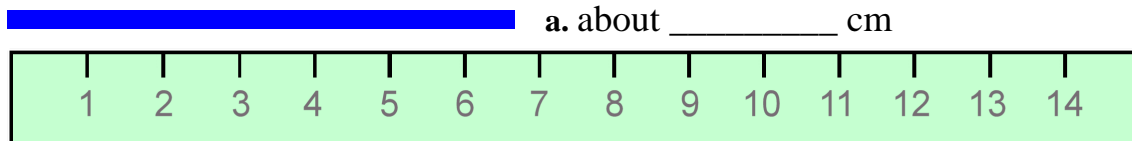
This pencil is about 9 cm long. The end of the pencil is closer to 9 cm than to 8 cm.




3. Circle the number that is nearest to each arrow.



4. Measure the lines to the nearest centimeter.



5. This line is 1 cm long: . Your finger is probably about that wide; put it on top of the 1-cm line and check! Guess how long these lines are. Then measure.

	<u>My guess:</u>	<u>Measurement:</u>
a. _____	about _____ cm	about _____ cm
b. _____	about _____ cm	about _____ cm
c. _____	about _____ cm	about _____ cm

6. a. Find two small objects. Measure to find *about* how many centimeters longer one is than the other.

The _____ is *about* _____ cm longer than the _____.

b. Find other two small objects. Measure to find *about* how many centimeters longer one is than the other.

The _____ is *about* _____ cm longer than the _____.

7. Draw some lines here or on blank paper. Use a ruler. Hold the ruler down tight with one hand, while drawing the line with the other. It takes some practice!

a. 6 cm long



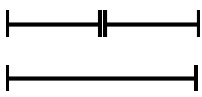

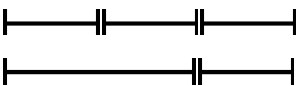
b. 3 cm long

c. 12 cm long





8. Find some small objects. First GUESS how long or tall they are. Then measure. If the item is not exactly so-many centimeters long, then measure it to the nearest centimeter and write “about” before the centimeter-amount, such as *about 8 cm*.

Item	GUESS	MEASUREMENT
	cm	cm
	cm	cm
	cm	cm
	cm	cm
	cm	cm


Inches and Half-Inches

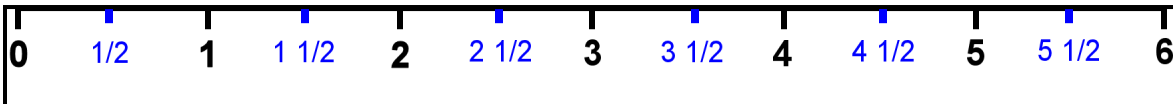
 This line is 1 inch long.  This line is $\frac{1}{2}$ inch long.	 Two half-inches make an inch!
 <p>3 inches and a $\frac{1}{2}$-inch = $3\frac{1}{2}$ inches (three and a half inches)</p>	 <p>three half-inches = $1\frac{1}{2}$ inches (one and a half inches)</p>


1. How long are the lines of inches and half-inches when placed end-to-end?


- a.  _____ inches
- b.  _____ inches
- c.  _____ inches
- d.  _____ in.


2. How long are these things in inches?

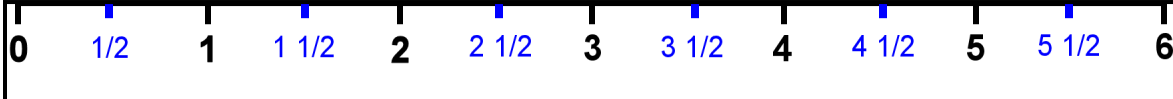
 a. _____ inches



 b. _____ inches



 c. _____ inches



You can cut out one of the rulers in this lesson and tape it on an existing ruler or cardboard after you have finished the exercises on this and the next page!

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Chapter 8: Regrouping in Addition and Subtraction

Introduction

The eighth chapter of *Math Mammoth Grade 2* deals with regrouping in addition (a.k.a. carrying) and in subtraction (a.k.a. borrowing). Regrouping in subtraction in particular can be somewhat challenging to some children. The free videos matched to the curriculum at <https://www.mathmammoth.com/videos/> (choose 2nd grade videos) can be used to help teach these topics.

In the first lesson, the child adds three-digit numbers with a regrouping in tens, but there is no regrouping in hundreds. Children already know how to regroup two-digit numbers, so this lesson simply extends that knowledge to numbers with three digits.

In the next lesson, children regroup 10 tens as a hundred (or carry to the hundreds). This is first illustrated with a visual model. You can adapt those exercises to be done with manipulatives instead, if desired.

Then we study regrouping twice: 10 ones form a new ten, and then 10 tens form a new hundred. Again, children first work with visual models, with the aim of helping them to understand the concept itself. Then, they learn the abstract process, adding the numbers in columns (one number written under the other).

Next, we study regrouping in subtraction, starting with two-digit numbers. First, children are taught to break one ten into 10 ones. For example, 5 tens 4 ones is written as 4 tens 14 ones; one of the tens is “broken down” into 10 ones. This is the process of regrouping: one of the tens “changes groups” from being with the tens to being with the ones.

After mastering that process, it is time to use regrouping in subtraction problems and learn the traditional paper-and-pencil method of subtracting (where one number is written under the other).

Then we study word problems that include the thought of “more” or “fewer”, and also several techniques or “tricks” for mental subtraction. Please note that the word problems in this chapter require both addition and subtraction. I do not include only subtraction word problems in a lesson that is about subtraction, because children need to learn to recognize whether a problem requires addition or subtraction. Thus, the word problem sets always include both addition and subtraction word problems.

After this, it is time to study regrouping in subtraction with three-digit numbers. There are four cases:

1. Regrouping one ten as 10 ones, such as is necessary in $546 - 229$.
2. Regrouping one hundred as 10 tens, such as is necessary in $728 - 441$.
3. Regrouping two times (one ten as 10 ones, and one hundred as 10 tens), such as in $725 - 448$.
4. Regrouping with zero tens, such as is necessary in $405 - 278$.

In second grade, we only study cases (1) and (2) from the list above. The other two cases are left for third grade.

In the end of the chapter, children encounter bar graphs again. They also play Euclid’s game, which is meant as a fun, supplemental lesson. You may omit it if time does not allow.

Pacing Suggestion for Chapter 8

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 8	page	span	suggested pacing	your pacing
Adding 3-Digit Numbers in Columns	82	2 pages	1 day	
Regrouping 10 Tens as a Hundred	84	4 pages	2 days	
Add in Columns: Regrouping Twice	88	4 pages	2 days	
Regrouping in Subtraction, Part 1	92	3 pages	2 days	
Regrouping in Subtraction, Part 2	95	3 pages	2 days	
Regrouping in Subtraction, Part 3	98	4 pages	2 days	
Word Problems	102	3 pages	2 days	
Mental Subtraction, Part 1	105	2 pages	1 day	
Mental Subtraction, Part 2	107	3 pages	2 days	
Regrouping One Ten as Ten Ones with 3-Digit Numbers	110	3 pages	1 day	
Regrouping One Hundred as 10 Tens	113	4 pages	2 days	
Graphs and Problems	117	2 pages	1 day	
Euclid's Game (optional).....	119	3 pages	1 day	
Mixed Review Chapter 8	122	2 pages	1 day	
Review Chapter 8	124	4 pages	2 days	
Chapter 8 Test (optional)				
TOTALS		43 pages	23 days	
with optional content		(46 pages)	(24 days)	

Games and Activities

Missing Number Puzzles

Create puzzles for your student(s) by taking a simple addition or subtraction problem, and leaving out some of the digits. For example, the problem on the right is turned into a Missing Number Puzzle by leaving out three digits.

For this chapter, use three-digit addition and both two and three-digit subtraction problems that involve regrouping.

You can also reverse the roles, and have your student make these types of puzzles for you to solve. Have your student check your work — and sometimes, make an intentional mistake for them to find!

This activity is from <https://www.earlyfamilymath.org> and published here with permission.

Original:		Puzzle form:
$\begin{array}{r} 612 \\ - 171 \\ \hline 441 \end{array}$	→	$\begin{array}{r} \square 1 \square \\ - 1 \square 1 \\ \hline 441 \end{array}$

7-Card Draw to a Target

You need: Number cards from 0 through 9. (Standard playing cards work if you make, say, the queen to be zero. Or, play with numbers 1-9.) Paper and pencil for each player (for adding).

Game play: Choose a 3-digit target number, say 600. Each player takes seven cards from the deck, and uses those to form two 3-digit numbers to add (one card is left unused). Each player adds the two numbers they formed, using paper & pencil or mental math. The player closest to the target wins a point for that round.

The player with the highest number of points after, say, five rounds, wins.

This game is from <https://www.earlyfamilymath.org> and published here with permission.

Games and Activities at Math Mammoth Practice Zone

Single-Digit Addition

Simple practice of addition facts with single-digit addends.

<https://www.mathmammoth.com/practice/addition-single-digit#questions=10&toe=18&pt=general>

Hidden Picture Addition Game

Use a number range of 2 to 9 to specifically practice basic addition facts.

<https://www.mathmammoth.com/practice/mystery-picture>

Mathy's Berry Picking Adventure

Join Mathy, our mammoth mascot, on his berry-picking adventure, and practice your basic addition or subtraction facts!

<https://www.mathmammoth.com/practice/mathy-berries#mode=addition-single&duration=2m>

<https://www.mathmammoth.com/practice/mathy-berries#mode=sub-20&duration=2m>

Bingo

Simply click on the right answer in the grid, and it will be colored green. Once you get five in a row, a column, or diagonally, bingo, you win! For this chapter, choose Addition (Single-Digit) or Subtraction (Under 20).

<https://www.mathmammoth.com/practice/bingo>

Fruity Math

Click the fruit with the correct answer and try to get as many points as you can within two minutes. The first link below is for addition facts, the second one for subtraction within 0-18.

https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=2,9x1__3,9x1&max-sum=1000

https://www.mathmammoth.com/practice/fruity-math#op=subtraction&duration=30&mode=manual&config=11,18x1__2,9x1&allow-neg=0

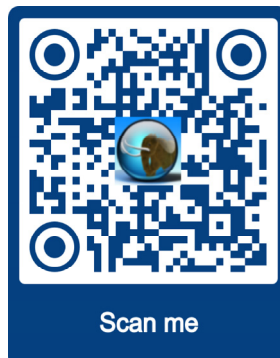
Further Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter, including pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

We heartily recommend you take a look! Many of our customers love using these resources to supplement the bookwork. You can use these resources as you see fit for extra practice, to illustrate a concept better and even just for some fun. Enjoy!

<https://l.mathmammoth.com/gr2ch8>

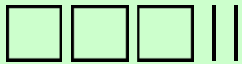


Sample worksheet from
<https://www.mathmammoth.com>

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Regrouping One Hundred As 10 Tens

We need to subtract 170....
but we cannot take away
seven tens because there
are only two tens.



320

→

“Break down” one HUNDRED as 10
tens. Now we can subtract! Take away
1 hundred and 7 tens.

What is left? _____

→

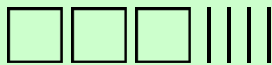


→

2 hundreds + 12 tens

1. Break down one hundred into 10 tens (regroup). Draw squares for hundreds, sticks for tens, and dots for ones. Then take away (subtract) what is asked.

a.



340

→



_____ hundreds + _____ tens

Take away 180. What is left? _____

b.



410

→

_____ hundreds + _____ tens

Take away 250. What is left? _____

c.



322

→

_____ hundreds + _____ tens + _____ ones

Take away 171. What is left? _____

d.



254

→

_____ hundreds + _____ tens + _____ ones

Take away 174. What is left? _____

2. First, regroup 1 hundred as ten tens. Then subtract.

a. 4 hundreds 5 tens 7 ones \Rightarrow

$$\begin{array}{r} \text{3} \text{15} \text{ tens} \text{7} \text{ ones} \\ - \text{2} \text{ hundreds} \text{8} \text{ tens} \text{2} \text{ ones} \\ \hline \text{1} \text{7} \text{ tens} \text{5} \text{ ones} \end{array}$$

b. 7 hundreds 2 tens 1 one \Rightarrow

$$\begin{array}{r} \text{ } \text{ hundreds} \text{ } \text{ tens} \text{ } \text{ one} \\ - \text{3} \text{ hundreds} \text{6} \text{ tens} \text{1} \text{ one} \\ \hline \text{ } \text{ hundred} \text{ } \text{ tens} \text{ } \text{ ones} \end{array}$$

c. 3 hundreds 2 tens 0 ones \Rightarrow

$$\begin{array}{r} \text{ } \text{ hundreds} \text{ } \text{ tens} \text{ } \text{ ones} \\ - \text{2} \text{ hundreds} \text{5} \text{ tens} \text{0} \text{ ones} \\ \hline \text{ } \text{ hundred} \text{ } \text{ tens} \text{ } \text{ ones} \end{array}$$

d. 7 hundreds 0 tens 6 ones \Rightarrow

$$\begin{array}{r} \text{ } \text{ hundreds} \text{ } \text{ tens} \text{ } \text{ ones} \\ - \text{6} \text{ hundreds} \text{2} \text{ tens} \text{2} \text{ ones} \\ \hline \text{ } \text{ hundred} \text{ } \text{ tens} \text{ } \text{ ones} \end{array}$$

e. 8 hundreds 0 tens 3 ones \Rightarrow

$$\begin{array}{r} \text{ } \text{ hundreds} \text{ } \text{ tens} \text{ } \text{ ones} \\ - \text{5} \text{ hundreds} \text{3} \text{ tens} \text{1} \text{ one} \\ \hline \text{ } \text{ hundred} \text{ } \text{ tens} \text{ } \text{ ones} \end{array}$$

3. How to regroup when subtracting $947 - 282$ (below)? Fill in Jill's explanation.

It would be easy, except I cannot subtract ___ tens from ___ tens. So, I need to take one of the ___ hundreds and break it down as tens. So, now I will have only ___ hundreds but I will now get ___ tens. Now I can subtract.

9 hundreds 4 tens 7 ones \Rightarrow

$$\begin{array}{r} \text{ } \text{ hundreds} \text{ } \text{ tens} \text{ } \text{ ones} \\ - \text{2} \text{ hundreds} \text{8} \text{ tens} \text{2} \text{ ones} \\ \hline \text{ } \text{ hundred} \text{ } \text{ tens} \text{ } \text{ ones} \end{array}$$

Compare how we write the regrouping when subtracting in columns.

$$\begin{array}{r}
 5 \text{ hundreds } 4 \text{ tens } 7 \text{ ones} \Rightarrow \\
 \begin{array}{r}
 4 \text{ hundreds } 14 \text{ tens } 7 \text{ ones} \\
 - 1 \text{ hundred } 5 \text{ tens } 2 \text{ ones} \\
 \hline
 3 \text{ hundreds } 9 \text{ tens } 5 \text{ ones}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 4 \ 14 \\
 5 \ 4 \ 7 \\
 - 1 \ 5 \ 2 \\
 \hline
 3 \ 9 \ 5
 \end{array}$$

4. Fill in. Subtract both ways.

a.

$$\begin{array}{r}
 4 \text{ hundreds } 5 \text{ tens } 6 \text{ ones} \Rightarrow \\
 \begin{array}{r}
 \square \text{ hundreds } \square \text{ tens } \square \text{ ones} \\
 - 2 \text{ hundreds } 7 \text{ tens } 2 \text{ ones} \\
 \hline
 \square \text{ hundreds } \square \text{ tens } \square \text{ ones}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 4 \ 5 \ 6 \\
 - 2 \ 7 \ 2 \\
 \hline
 \end{array}$$

b.

$$\begin{array}{r}
 6 \text{ hundreds } 0 \text{ tens } 5 \text{ ones} \Rightarrow \\
 \begin{array}{r}
 \square \text{ hundreds } \square \text{ tens } \square \text{ ones} \\
 - 4 \text{ hundreds } 3 \text{ tens } 3 \text{ ones} \\
 \hline
 \square \text{ hundreds } \square \text{ tens } \square \text{ ones}
 \end{array}
 \end{array}$$

$$\begin{array}{r}
 6 \ 0 \ 5 \\
 - 4 \ 3 \ 3 \\
 \hline
 \end{array}$$

5. Subtract.

a.

$$\begin{array}{r}
 9 \ 2 \ 6 \\
 - 1 \ 4 \ 6 \\
 \hline
 \end{array}$$

b.

$$\begin{array}{r}
 5 \ 2 \ 9 \\
 - 9 \ 5 \\
 \hline
 \end{array}$$

c.

$$\begin{array}{r}
 4 \ 1 \ 4 \\
 - 3 \ 2 \ 2 \\
 \hline
 \end{array}$$

d.

$$\begin{array}{r}
 7 \ 7 \ 3 \\
 - 5 \ 3 \ 6 \\
 \hline
 \end{array}$$

e.

$$\begin{array}{r}
 6 \ 7 \ 0 \\
 - 2 \ 2 \ 6 \\
 \hline
 \end{array}$$

f.

$$\begin{array}{r}
 7 \ 0 \ 8 \\
 - 1 \ 5 \ 6 \\
 \hline
 \end{array}$$

g.

$$\begin{array}{r}
 5 \ 0 \ 3 \\
 - 3 \ 4 \ 1 \\
 \hline
 \end{array}$$

h.

$$\begin{array}{r}
 7 \ 4 \ 8 \\
 - 3 \ 7 \ 6 \\
 \hline
 \end{array}$$

6. Solve the problems.

- a. Max has two books to read. The first book has 270 pages, and the second book has 60 fewer pages than the first. How many pages does the second book have?

- b. Liz and Hannah played a game. Hannah got 192 points and Liz got 433 points. How many more points did Liz get than Hannah?

<hr/>		

- c. Again, Liz and Hannah played a game. This time Liz got 215 points and Hannah got 93 points more than Liz. So, how many points did Hannah get?

<hr/>		

- d. Denny and Micah dug up some worms for bait before they went fishing. Denny got 14 worms, which was 11 fewer worms than what Micah got. How many worms did Micah get?

What was the total number of worms that both boys got?

Puzzle Corner

Figure out the missing numbers in these subtractions!
You might need to regroup.

$$\begin{array}{r} \square \square 5 \\ - 15 \square \\ \hline 292 \end{array}$$

$$\begin{array}{r} 6 \square 4 \\ - \square 5 \square \\ \hline 326 \end{array}$$

$$\begin{array}{r} 9 \square \square \\ - \square 5 5 \\ \hline 726 \end{array}$$

$$\begin{array}{r} 96 \square \\ - \square 5 5 \\ \hline 5 \square 5 \end{array}$$

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Review Chapter 8

1. Add.

a.

$$\begin{array}{r} 215 \\ + 477 \\ \hline \end{array}$$

b.

$$\begin{array}{r} 192 \\ + 225 \\ \hline \end{array}$$

c.

$$\begin{array}{r} 303 \\ 128 \\ + 287 \\ \hline \end{array}$$

d.

$$\begin{array}{r} 409 \\ 219 \\ + 136 \\ \hline \end{array}$$

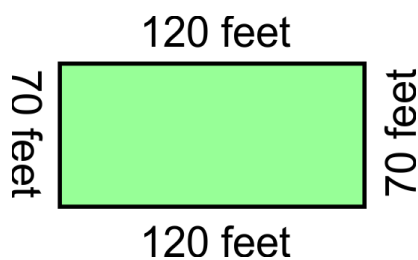
2. Sarah bought three bicycles for her children.
Each bicycle cost \$154.
How much was the total cost?

+		
<hr/>		

3. Add mentally. THINK of the new hundred you might get from adding the tens.

a.	b.	c.
$80 + 40 = \underline{\hspace{2cm}}$	$90 + 90 = \underline{\hspace{2cm}}$	$690 + 50 = \underline{\hspace{2cm}}$
$780 + 40 = \underline{\hspace{2cm}}$	$240 + 50 = \underline{\hspace{2cm}}$	$470 + 80 = \underline{\hspace{2cm}}$

4. Find how many feet it is if you walk all of the way around this rectangle.



+		
<hr/>		

5. Subtract. Regroup if necessary. Check each subtraction by *adding your answer and the number you subtracted*.

<p>a.</p> $\begin{array}{r} 88 \\ - 54 \\ \hline \end{array}$ $\begin{array}{r} + 54 \\ \hline \end{array}$	<p>b.</p> $\begin{array}{r} 63 \\ - 48 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$
<p>c.</p> $\begin{array}{r} 84 \\ - 49 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$	<p>d.</p> $\begin{array}{r} 882 \\ - 159 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$
<p>e.</p> $\begin{array}{r} 556 \\ - 391 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$	<p>f.</p> $\begin{array}{r} 550 \\ - 246 \\ \hline \end{array}$ $\begin{array}{r} + \\ \hline \end{array}$

6. Subtract using mental math methods.

<p>a. $15 - 7 = \underline{\quad}$</p> <p>$55 - 7 = \underline{\quad}$</p>	<p>b. $13 - 5 = \underline{\quad}$</p> <p>$93 - 5 = \underline{\quad}$</p>	<p>c. $82 - 77 = \underline{\quad}$</p> <p>$45 - 41 = \underline{\quad}$</p>
<p>d. $80 - 71 = \underline{\quad}$</p> <p>$100 - 95 = \underline{\quad}$</p>	<p>e. $56 - 40 = \underline{\quad}$</p> <p>$56 - 43 = \underline{\quad}$</p>	<p>f. $78 - 35 = \underline{\quad}$</p> <p>$33 - 4 = \underline{\quad}$</p>

7. Find what numbers are missing.

a.

$$\begin{array}{r} 2 \blacksquare 4 \\ + 477 \\ \hline 731 \end{array}$$

b.

$$\begin{array}{r} 5 \blacksquare 9 \\ + \blacksquare 25 \\ \hline 914 \end{array}$$

c.

$$\begin{array}{r} 20 \blacksquare \\ + 6 \blacksquare 6 \\ \hline 892 \end{array}$$

d.

$$\begin{array}{r} 68 \blacksquare \\ + \blacksquare 19 \\ \hline 900 \end{array}$$

8. Solve.

- a. Some people are riding on the bus. At the bus stop, 13 people get on. Now there are 52 people on the bus. How many were there originally?

<hr/>	

- b. Molly has 23 stuffed toys that she likes, and 16 that she does not like.
How many stuffed toys does Molly have?

<hr/>	

- c. Molly gave the 16 toys she does not like to her sister Annie.
Now, Annie has 33 toys.
How many toys did Annie have before?

<hr/>	

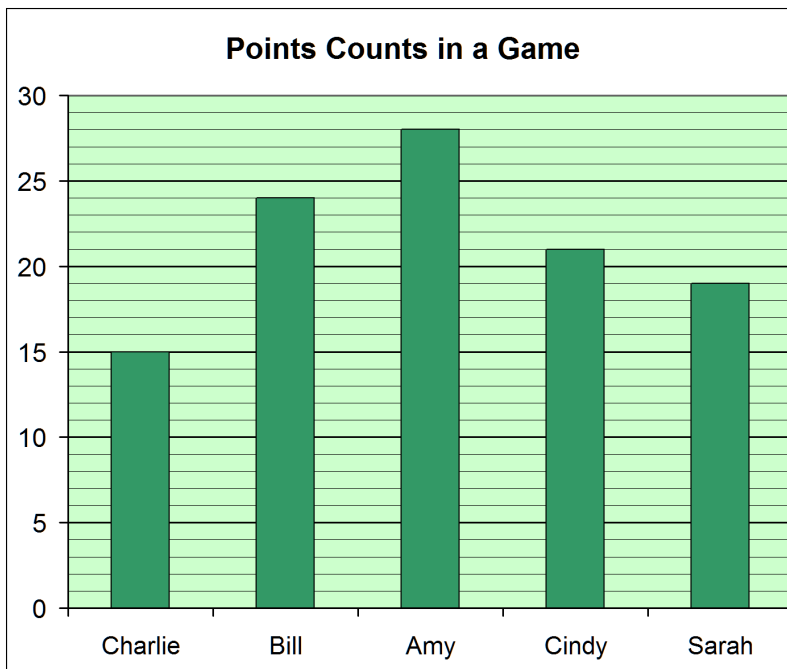
- d. Jessica had 465 points in a computer game. She played and got 145 more points. Then she also got a 90-point bonus!
How many points does Jessica have now?

- e. Olivia did 26 jumping jacks, which was 14 fewer jumping jacks than what her brother Aaron did.
How many jumping jacks did Aaron do?

<hr/>	

<hr/>	

9. a. Fill in the table with how many points the children got in the game.



CHILD	POINTS
Charlie	15
Bill	
Amy	
Cindy	
Sarah	

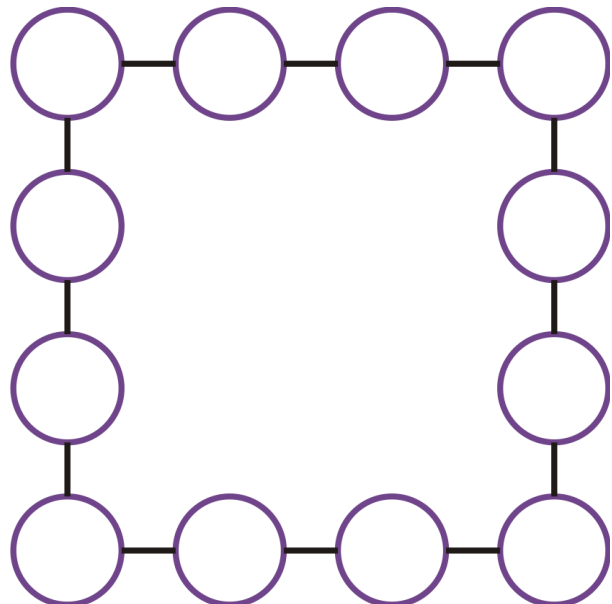
b. How many fewer points did Bill get than Amy?

c. How many more points did Cindy get than Charlie?

Can you place numbers from 1 through 12 into the circles so that the sum of each connecting line is 26?

Hint: The numbers that go in the top corners are 7 and 6, and the numbers that go in the bottom corners are 5 and 8.

Puzzle Corner



Chapter 9: Money

Introduction

In chapter 9, children count coins and bills, and learn to write money amounts in cents or in dollars. They also practice finding change, starting with very easy problems, such as buying an item for 40¢ and paying with \$1. Another new skill to learn is to find change by counting up. Only small money amounts are used. If you like, you can use real or play money, and set up a play store for these exercises.

The last topic of the chapter is adding small money amounts in columns, using the standard paper-and-pencil method for addition. This topic requires that the child has mastered regrouping in addition, as studied in chapter 8.

You can make free worksheets for counting coins at <https://www.homeschoolmath.net/worksheets/money.php>, or using the worksheet generator that comes with the curriculum.

Pacing Suggestion for Chapter 9

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. Please also see the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 9	page	span	suggested pacing	your pacing
Counting Coins Review	130	4 pages	2 days	
Change.....	134	3 pages	2 days	
Dollars	137	3 pages	2 days	
Counting Change	140	2 pages	1 day	
Adding Money Amounts	142	2 pages	1 day	
Mixed Review Chapter 9	144	3 pages	2 days	
Review Chapter 9	147	2 pages	1 day	
Chapter 9 Test (optional)				
TOTALS		19 pages	11 days	

Games and Activities

Counting Money

You need: A bunch of coins to count.

Give the child an amount to make with the coins, such as 14 cents. Once the child does so, it is their turn to give you a money amount to make with the coins.

Here in 2nd grade, start out with pennies, dimes, and nickels to check the child has mastered counting those. Then add the quarter. Remind the child that two quarters is 50 cents, three quarters is 75 cents, and four quarters is 100 cents. After that, you can go on to mixtures of quarters and other coins (step by step!).

Note: You can ask the child to check your work, and then in turn, you check theirs. In the course of the activity, you can then sometimes make an intentional error, so that the child can discover it.

Shopping Game

You need: Various items to purchase at the store, paper, pen, coins, a bag or wallet to keep money in.

Make a play store that has various items to purchase. I suggest the prices to be less than \$10. The child may enjoy choosing prices, and/or writing price tags for them.

In second grade, children should not only practice shopping, but also being a storekeeper and making change.

Some children may enjoy it if the storekeeper writes a receipt for every purchase. All of my children enjoyed this activity very much.

Games and Activities at Math Mammoth Practice Zone

Counting Money

Practice counting coins and bills! You can choose the exact coins and bills to use, the maximum for the total amount, the maximum number of coins/bills, and more. For this chapter, I recommend choosing either all the coins minus the half-dollar, or all the coins and the 1-dollar bill

<https://www.mathmammoth.com/practice/count-money>

Here is a quick link for five questions of counting money, with a maximum of 15 coins/bills to count at a time:

<https://www.mathmammoth.com/practice/count-money#currency=usd&include=penny,nickel,dime,quarter,1d,2d,5d&max-value=10&max-amount=15&sides=both&questions=5>

Shopping Game

Practice making money amounts with coins and bills in this online game! You're shown an item to buy, and you click on coins/bills to make that exact amount.

<https://www.mathmammoth.com/practice/shopping-game#currency=usd&include=all&max-value=5&show=obverse&questions=5>

Make Change

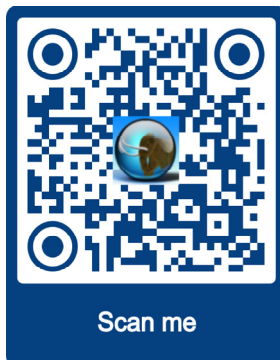
Practice making change with coins and bills (banknotes) in this online game! You are shown an item that someone buys, its price, and how much they give, and you click on coins/bills to make the correct change.

<https://www.mathmammoth.com/practice/change#currency=usd&include=penny,nickel,dime,quarter,1d,5d&max-value=1&show=obverse&questions=5>

Further Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter. These resources match the topics in this chapter, and offer online practice, online games (occasionally, printable games), and interactive illustrations of math concepts. We heartily recommend you take a look. Many people love using these resources to supplement the bookwork, to illustrate a concept better, and for some fun. Enjoy!

<https://l.mathmammoth.com/gr2ch9>



Sample worksheet from
<https://www.mathmammoth.com>

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Change

When you buy something in a store, you often do not have the exact amount of money to pay for it. Instead, you give the clerk *more* money than what the item costs. The clerk then gives you some money back. This is called your *change*.

A pen costs 40¢. You don't have the coins to make exactly 40¢, so you give the clerk 50¢. That is 10¢ too much! But then the clerk gives you back 10¢ — your change.



You give: Your change:



50¢



10¢







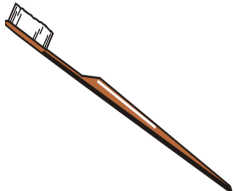

The clerk gives you back the *difference* between the price and what you paid.

In each problem below, find the change you get back. Think of the DIFFERENCE between the price and what you pay. Or, think how many cents you paid “too much.” That will be your change.







You can set up a “play store” to do these problems, using real money, one person as a clerk, and one person as a customer.

1. Write how many cents you give, and how many cents is your change.

<p>a.</p> <p>Price: 20¢</p> <p>You give: _____¢ _____¢</p> <p>Your change:</p>	<p>b.</p> <p>Price: 30¢</p> <p>You give: _____¢ _____¢</p> <p>Your change:</p>
<p>c.</p> <p>Price: 35¢</p> <p>You give: _____¢ _____¢</p> <p>Your change:</p>	<p>d.</p> <p>Price: 17¢</p> <p>You give: _____¢ _____¢</p> <p>Your change:</p>

<p>e. You give: Your change:</p> <div style="display: flex; align-items: center; justify-content: center; gap: 20px;">   </div> <p>Price: 22¢ _____ ¢ _____ ¢</p>	<p>f. You give: Your change:</p> <div style="display: flex; align-items: center; justify-content: center; gap: 20px;">   </div> <p>Price: 11¢ _____ ¢ _____ ¢</p>
<p>g. You give: Your change:</p> <div style="display: flex; align-items: center; justify-content: center; gap: 20px;">   </div> <p>Price: 60¢ _____ ¢ _____ ¢</p>	<p>h. You give: Your change:</p> <div style="display: flex; align-items: center; justify-content: center; gap: 20px;">   </div> <p>Price: 80¢ _____ ¢ _____ ¢</p>


2. Circle the coins you use to pay. Write how many cents your change is.

<p>a. You buy a drink for 55¢.</p>	<p>You have:</p> 	<p>Change: _____ ¢</p>
<p>b. You buy raisins for 33¢.</p>	<p>You have:</p> 	<p>Change: _____ ¢</p>
<p>c. You buy a toy for 46¢.</p>	<p>You have:</p> 	<p>Change: _____ ¢</p>
<p>d. You buy a book for 88¢.</p>	<p>You have:</p> 	<p>Change: _____ ¢</p>
<p>e. You buy a basket for 75¢.</p>	<p>You have:</p> 	<p>Change: _____ ¢</p>
<p>f. You buy crayons for 63¢.</p>	<p>You have:</p> 	<p>Change: _____ ¢</p>

3. Practice some more! Figure out the change.

<p>a. Paper costs 70¢. You give \$1.</p> <p>Change: _____ ¢</p>	<p>b. A banana costs 41¢. You give 50¢.</p> <p>Change: _____ ¢</p>	<p>c. A book costs 94¢. You give \$1.</p> <p>Change: _____ ¢</p>
<p>d. A toy costs 20¢. You give 50¢.</p> <p>Change: _____ ¢</p>	<p>e. A drink costs 70¢. You give \$1.</p> <p>Change: _____ ¢</p>	<p>f. A towel costs 62¢. You give 75¢.</p> <p>Change: _____ ¢</p>

4. Now you buy many items. First add their prices to find the total. Then find the change. Draw the coins that could be your change.

<p>a. A magazine costs 20¢. You buy three of them. You give \$1.</p> <p><u>Total cost: 60¢</u></p> <p><u>Change: 40¢</u></p> <div style="text-align: center;">  </div>
<p>b. A toy costs 15¢ and another toy 20¢. You give 50¢.</p> <p>Total cost: _____ ¢</p> <p>Change: _____ ¢</p>
<p>c. A lollipop costs 8¢. You buy two of them. You give 20¢.</p> <p>Total cost: _____ ¢</p> <p>Change: _____ ¢</p>
<p>d. A pencil costs 5¢. You buy four of them. You give 25¢.</p> <p>Total cost: _____ ¢</p> <p>Change: _____ ¢</p>
<p>e. An eraser costs 35¢ and a pencil 10¢. You give 50¢.</p> <p>Total cost: _____ ¢</p> <p>Change: _____ ¢</p>

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Chapter 10: Exploring Multiplication

Introduction

The last chapter of *Math Mammoth Grade 2* covers the concept of multiplication, its connection with repeated addition, and some easy multiplication practice.

The lessons here are self-explanatory. The student first learns the meaning of multiplication as “many times the same size group”. Then we practice writing multiplication as repeated addition and vice versa. Number-line jumps are another way to illustrate multiplication.

The actual study and memorization of the multiplication tables is in the third grade. However, you can certainly help your child to notice the patterns in the easy tables of 2, 5, and 10, and encourage their memorization.

If the time allows and the child is receptive, now you can study multiplication tables even further.

Pacing Suggestion for Chapter 10

Please add one day to the pacing for the test if you will use it. Note that the specific lessons in the chapter can take several days to finish. They are not “daily lessons.” As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. See also the user guide at <https://www.mathmammoth.com/userguides/>.

The Lessons in Chapter 10	page	span	suggested pacing	your pacing
Many Times the Same Group	151	3 pages	1 day	
Multiplication and Addition	154	4 pages	2 days	
Multiplying on a Number Line	158	3 pages	2 days	
Multiplication Practice	161	2 pages	1 day	
Mixed Review Chapter 10	163	3 pages	2 days	
Review Chapter 10	166	2 pages	1 day	
Chapter 10 Test (optional)				
TOTALS		17 pages	9 days	

Games and Activities

Multiplication Arrays

You need: A bunch of small items.

Activity: Ask the child to illustrate a multiplication, such as 3×4 , by placing the small items into four rows of three, or three rows of four (as an array). Use numbers from 1 to 5, or perhaps from 1 to 6, as numbers to be multiplied. Take turns reversing roles so that the child will also give you a multiplication to illustrate.

Once the child has mastered this, switch to using a product (the result of a multiplication). For example, ask the child to make a multiplication for 10. The child should make two rows of five, or five rows of two.

This is a good activity to investigate how numbers are broken down into factors. The child might note that for some numbers, such as 5 or 7, there is only one way to do this: one row of five (or seven) objects.

Multiplication Battle

You need: A set of number cards from 1 to 5. (You can use two decks of regular playing cards, and remove all but the cards 1-5).

Game Play: In each round, each player is dealt two cards face up, and has to multiply the two numbers. The player with the highest product gets all the cards from the other players. After enough rounds have been played to use all the cards in the deck, the player with the most cards wins. If two or more players have the same product, then those players get an additional two cards and use those to resolve the tie.

Three in a Row

You need: A deck of number cards with numbers from 1 to 5. A set of tokens for each player. To prepare, draw a 4-by-5 grid on paper, and fill it with even numbers in a random manner.

Game play: At their turn, the player will draw one number card from the deck. Then they multiply that number by 2 or by 4 (their choice), and place their token on the resulting number in the grid. Once a space in the grid is occupied, the other players cannot move there. The first player to get 3 tokens in a row or column wins.

Variation: Fill the grid with multiples of 5 instead of even numbers. Each player will then multiply their number card by 5 or 10 (their choice).

This game is adapted from <https://www.earlyfamilymath.org> and published here with permission.

Games and Activities at Math Mammoth Practice Zone

Multiplication Matching Game

Multiply by 1, 2, 5, and 10 while also uncovering a hidden picture in this fun matching game!
<https://www.mathmammoth.com/practice/multiplication-matching#tables=1,2,5,10&tiles=12>

Interactive Multiplication Chart

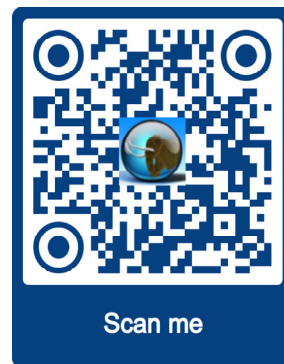
Practice filling in the multiplication tables chart online! You can customize the grid to your student's needs by having certain tables to be pre-filled or grayed out. For this level, you could choose only the tables of 1, 2, 5, and 10, or if your student likes exploring or is advanced, choose other tables, too.
<https://www.mathmammoth.com/practice/multiplication-table>

Further Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter, including pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

We heartily recommend you take a look! Many of our customers love using these resources to supplement the bookwork. You can use these resources as you see fit for extra practice, to illustrate a concept better and even just for some fun. Enjoy!



<https://l.mathmammoth.com/gr2ch10>

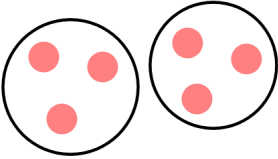
Sample worksheet from
<https://www.mathmammoth.com>

Many Times the Same Group

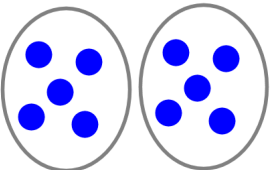
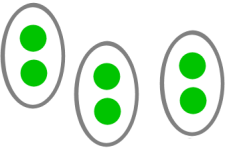
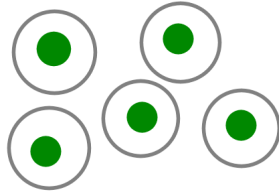
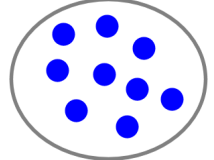
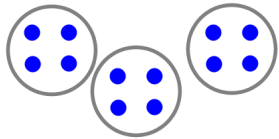

1. Write.

a. 2 times the word “CAT”	b. 3 times the word “ME”	c. 5 times the word “YOU”
d. 0 times the word “FROG”	e. 4 times the word “SCHOOL”	f. 1 time the word “HERE”

2. Draw groups of balls.

		
a. 2 times a group of 3 balls	b. 3 times a group of 5 balls	c. 1 time a group of 7 balls
d. 4 times a group of 1 ball	e. 0 times a group of 2 balls	f. 3 times a group of 3 balls
g. 0 times a group of 8 balls	h. 4 times a group of 0 balls	i. 5 times a group of 2 balls

3. Fill in the missing parts.

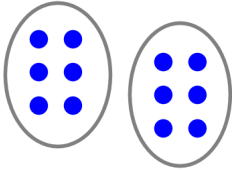
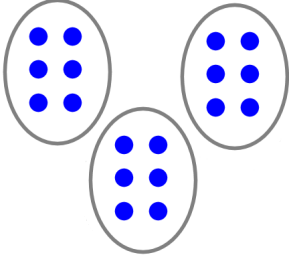
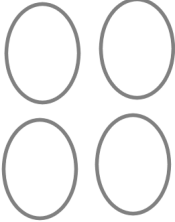


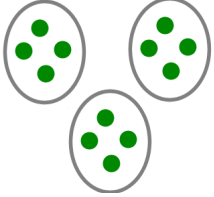
 <p>a. <u>2</u> times <u>5</u></p>	 <p>b. _____ times _____</p>	 <p>c. _____ times _____</p>
 <p>d. _____ times _____</p>	 <p>e. _____ times _____</p>	 <p>f. _____ times _____</p>

5×3 <p>This means “5 times a group of 3.” It is called multiplication.</p>	2×7 <p>This means “2 times a group of 7.” You <i>multiply</i> 2 times 7.</p>
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4. Now it is your turn to draw! Notice also the symbol \times which is read “times.”

<p>a. 2 times 4 2×4</p>	<p>b. 3 times 6 3×6</p>	<p>c. 1 times 7 1×7</p>
<p>d. 6 times 1 6×1</p>	<p>e. 4 times 0 4×0</p>	<p>f. 2 times 2 2×2</p>

5. Write the multiplication sentence. Write the total after the “=” sign.

<p>a. </p> <p>$2 \times 6 = 12$</p>	<p>b. </p> <p>_____ \times _____ = _____</p>	<p>c. </p> <p>_____ \times _____ = _____</p>
<p>d. </p> <p>_____ \times _____ = _____</p>	<p>e. </p> <p>_____ \times _____ = _____</p>	<p>f. </p> <p>_____ \times _____ = _____</p>

6. Draw the groups. Write the total.

<p>a. $8 \times 1 =$ _____</p>	<p>b. $1 \times 10 =$ _____</p>	<p>c. $2 \times 2 =$ _____</p>
<p>d. $5 \times 2 =$ _____</p>	<p>e. $2 \times 8 =$ _____</p>	<p>f. $3 \times 3 =$ _____</p>