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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. $260 + \underline{\hspace{1cm}} = 300$), 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.

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.

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

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>

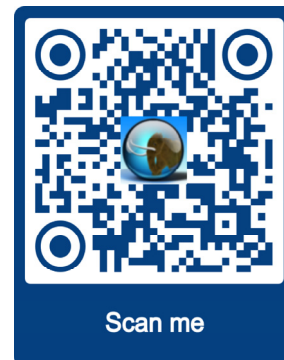
(2) The number lines have few tick marks and you need to estimate where to place the dot.

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

Further Resources on the Internet

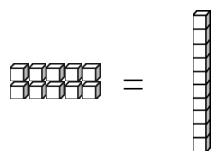
These resources match the topics in this chapter, and offer online practice, online games (occasionally, printable games), and interactive illustrations of math concepts. We heartily recommend you take a look. Many people love using these resources to supplement the bookwork, to illustrate a concept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

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



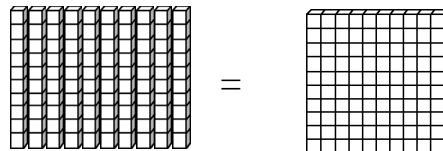
Three-Digit Numbers

Ten ones make a ten:



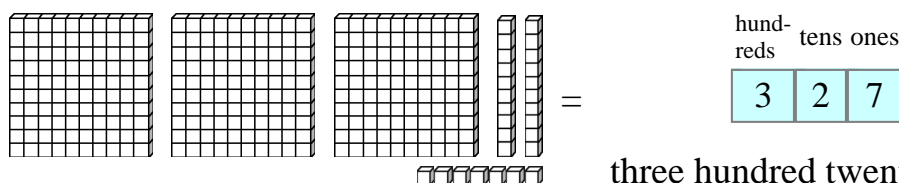
$$10 \text{ ones} = 10$$

Ten ten-pillars make ONE HUNDRED:



$$10 \text{ tens} = 100$$

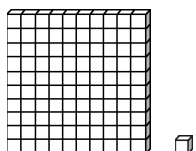
Write hundreds, tens, and ones in their own columns:



three hundred twenty-seven

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

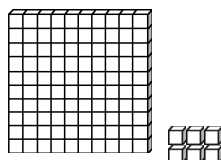
a. one hundred
one



hundreds tens ones

1	0	1
---	---	---

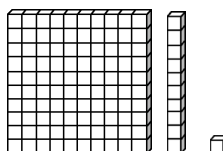
b. one hundred
six



hundreds tens ones

--	--	--

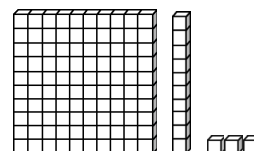
c. one hundred
eleven



hundreds tens ones

1	1	1
---	---	---

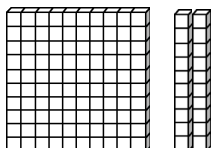
d. one hundred
thirteen



hundreds tens ones

--	--	--

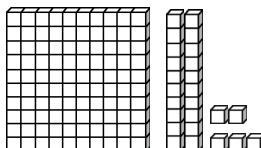
e. one hundred
twenty



hundreds tens ones

--	--	--

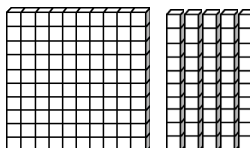
f. one hundred
twenty-five



hundreds tens ones

--	--	--

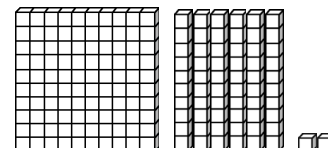
g. one hundred
fifty



hundreds tens ones

--	--	--

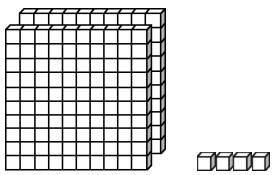
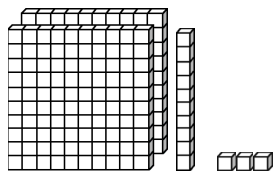
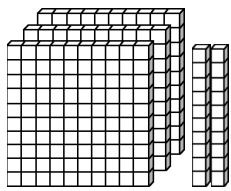
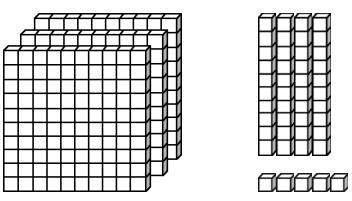
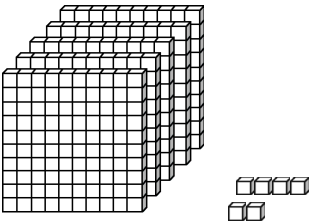
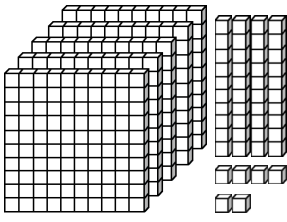
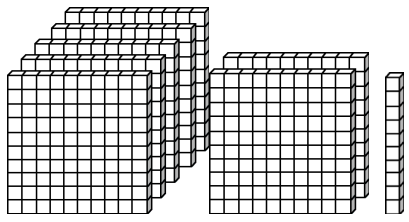
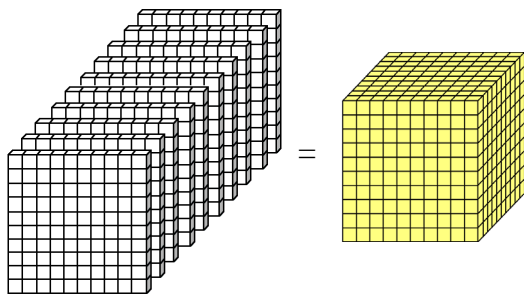
h. one hundred
sixty-two



hundreds tens ones

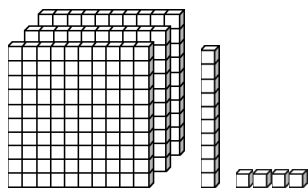
--	--	--

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

<p>a. <u>two hundred</u></p> <p><u>four</u></p>  <p>hundreds tens ones</p> <table border="1"><tr><td>2</td><td>0</td><td>4</td></tr></table>	2	0	4	<p>b. <u>two hundred</u></p> <p><u>thirteen</u></p>  <p>hundreds tens ones</p> <table border="1"><tr><td></td><td></td><td></td></tr></table>				<p>c. _____</p> <p>_____</p>  <p>hundreds tens ones</p> <table border="1"><tr><td></td><td></td><td></td></tr></table>			
2	0	4									
<p>d. _____</p> <p>_____</p>  <p>H T O</p> <table border="1"><tr><td></td><td></td><td></td></tr></table>				<p>e. _____</p> <p>_____</p>  <p>H T O</p> <table border="1"><tr><td></td><td></td><td></td></tr></table>				<p>f. _____</p> <p>_____</p>  <p>H T O</p> <table border="1"><tr><td></td><td></td><td></td></tr></table>			
<p>g. _____</p>  <p>H T O</p> <table border="1"><tr><td></td><td></td><td></td></tr></table>				<p>h. <u>Ten hundreds = One thousand</u></p>  <p>Th H T O</p> <table border="1"><tr><td>1</td><td>0</td><td>0</td><td>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.

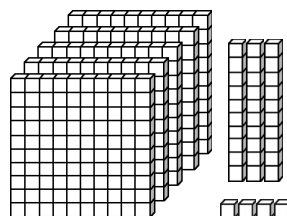


_____ + _____ + _____

H T O

--	--	--

b.

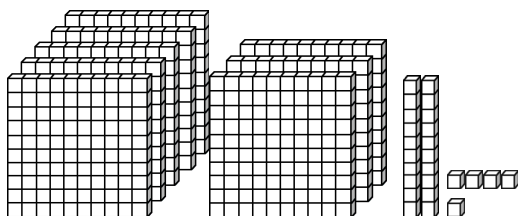


_____ + _____ + _____

H T O

--	--	--

c.

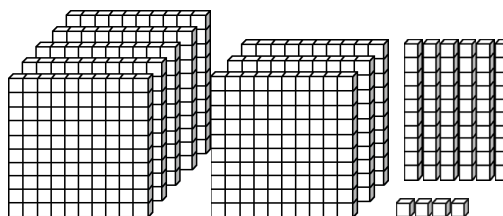


_____ + _____ + _____

H T O

--	--	--

d.



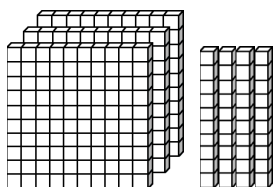
_____ + _____ + _____

H T O

--	--	--

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

e.



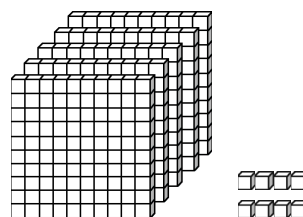
_____ + _____ + 0

H T O

--	--	--

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

f.

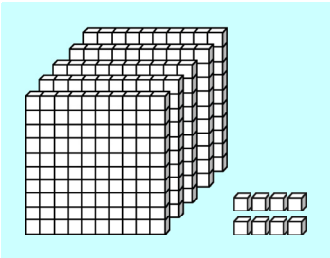
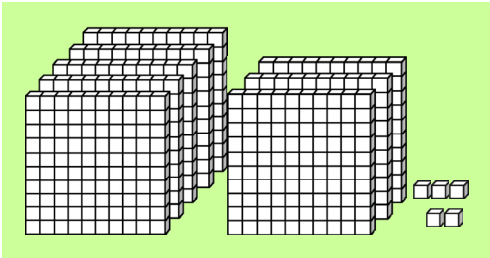
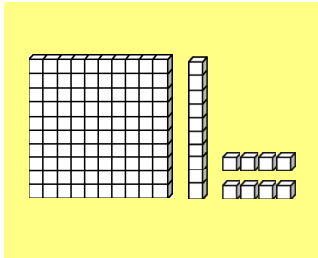
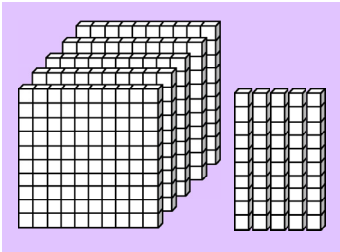
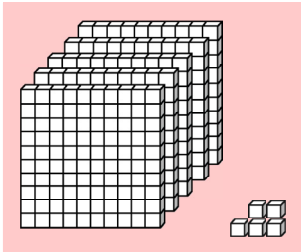
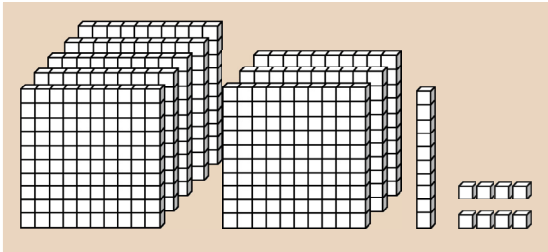


_____ + 0 + _____


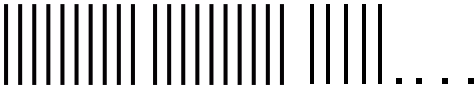
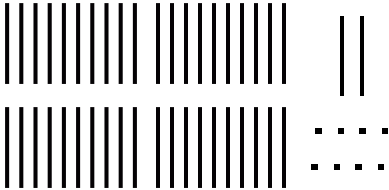
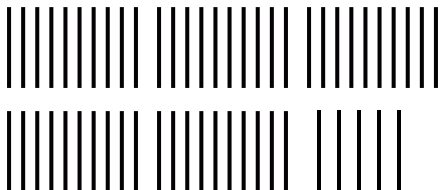
H T O

--	--	--

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.

a.  <u>235</u>	b.  _____
c.  _____	d.  _____

How many tens are in a thousand?

Puzzle Corner

(This page intentionally left blank.)

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:

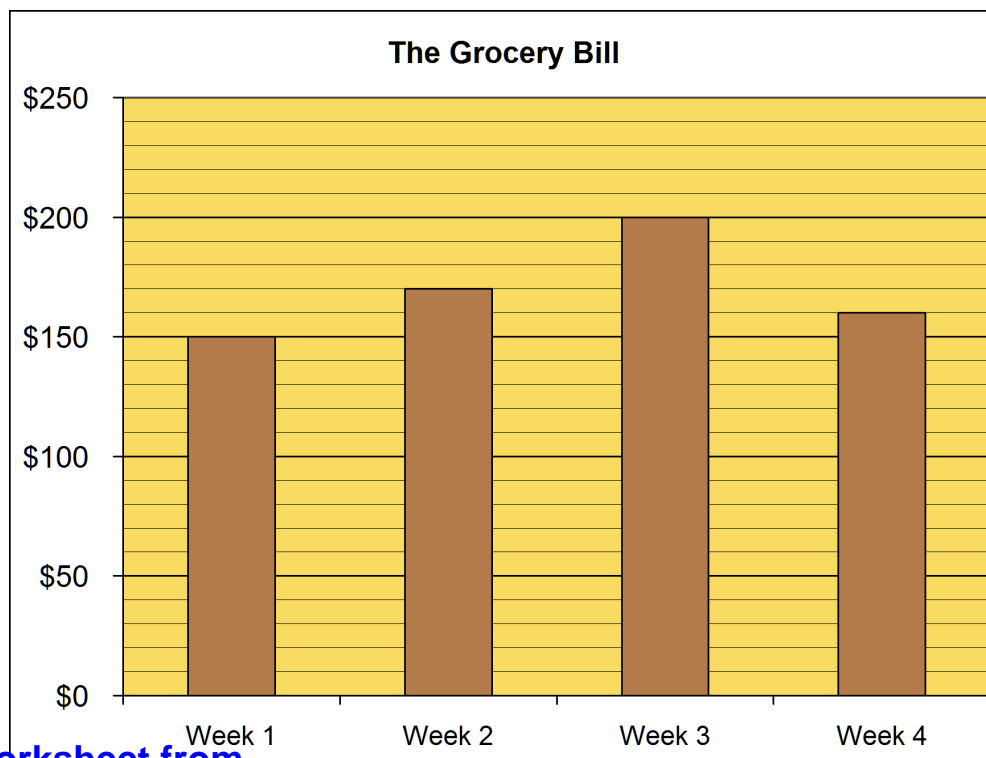
Then, Dan got 100 more points and Bill got 30 more points (Jim got none).

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

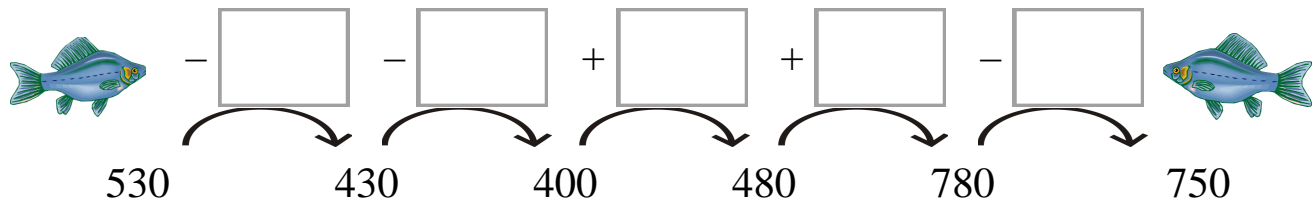
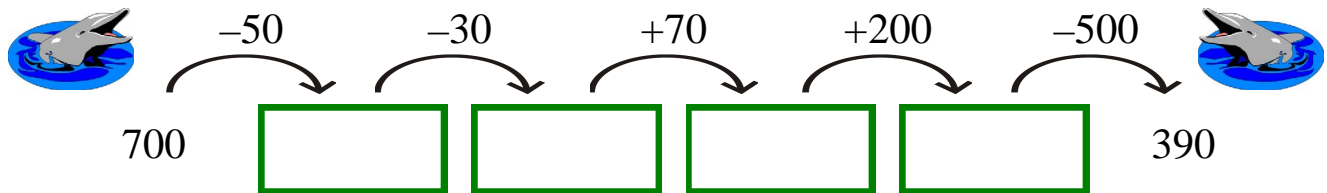
2. The bar graph shows how much money the Riley family spent for groceries in four different weeks.
- Mark above each bar how much they spent for groceries in dollars.
 - How much more did they pay for week 3 than for week 4?
 - How much more did they pay for week 2 than for week 1?



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

520	540	560		
620				
820				
				1000

4. Fill in.



5. Continue the patterns!

a. $590 - 60 =$ _____

$590 - 70 =$ _____

$590 - 80 =$ _____

$590 -$ _____ $=$ _____

$590 -$ _____ $=$ _____

$590 -$ _____ $=$ _____

b. $770 + 10 =$ _____

$770 + 20 =$ _____

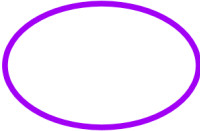
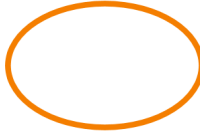
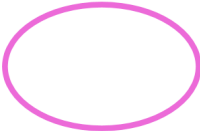
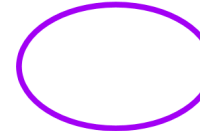
$770 + 30 =$ _____


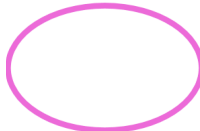
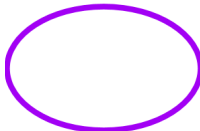

$770 +$ _____ $=$ _____


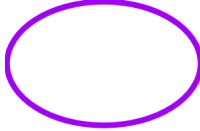

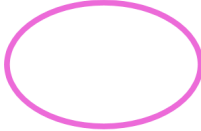
$770 +$ _____ $=$ _____

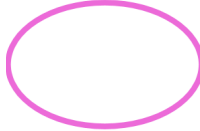
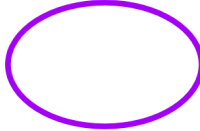
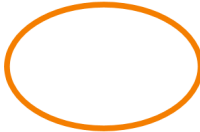
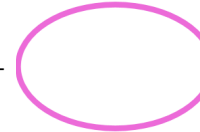
$770 +$ _____ $=$ _____

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	

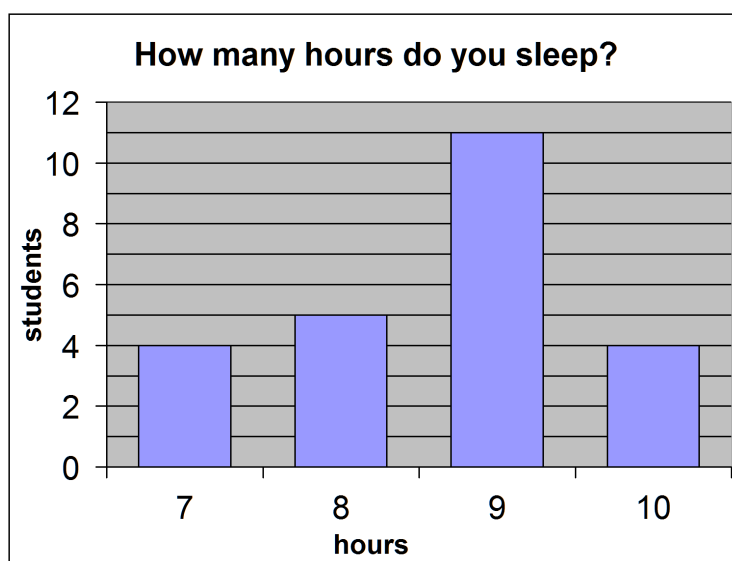
What was subtracted is missing:	i. 1000 -  = 700	j. 740 -  = 40
	k. 667 -  = 607	l. 999 -  = 299

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.

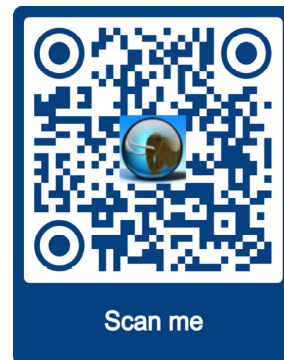
Once the courses are designed, it is time to do the racing. If using teams, this can be a relay race. The player or team that runs the fastest gains a point.

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>



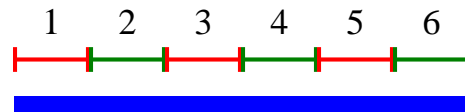
Measuring to the Nearest Centimeter

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



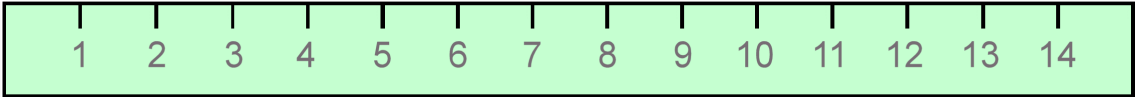

This line is 1 centimeter long: 

A centimeter is written in short form as “cm.”

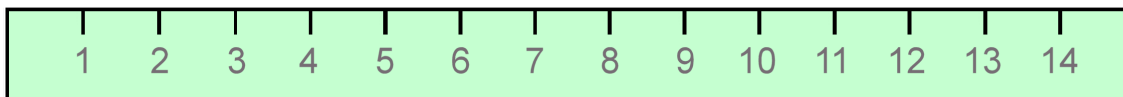
The blue line on the right is 6 cm long. →



1. How many centimeters long are these lines?

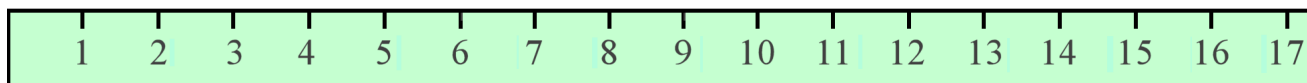
<p>a.  _____ cm</p>	<p>b.  _____ cm</p>
<p>c. _____ cm</p> 	
<p>d.  _____ cm</p>	

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.



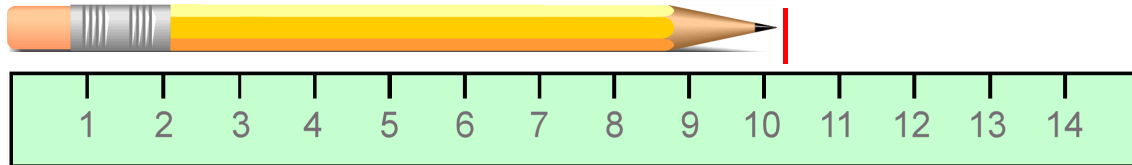
a. How much longer is pencil #1 than pencil #2? _____ cm

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

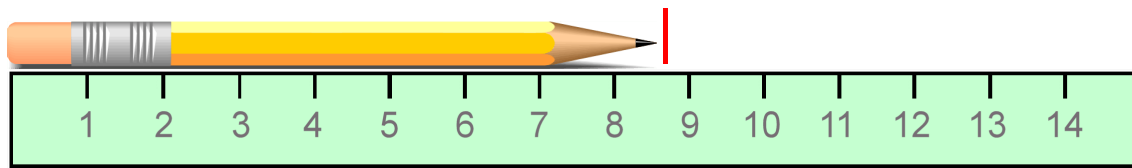


Most things are NOT exactly a certain number of whole centimeters. You can measure them to the nearest centimeter.

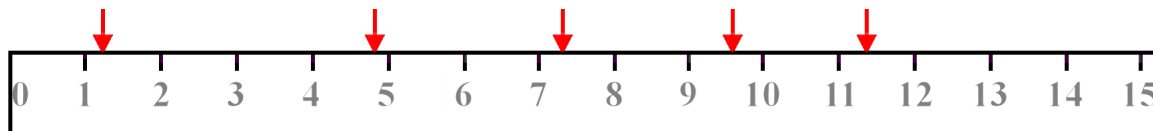
The pencil below is a little over 10 cm long. It is about 10 cm long.



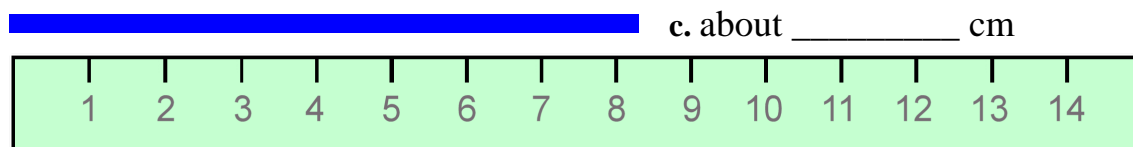
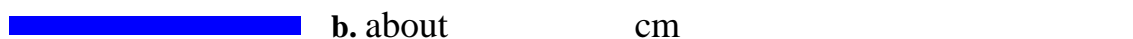
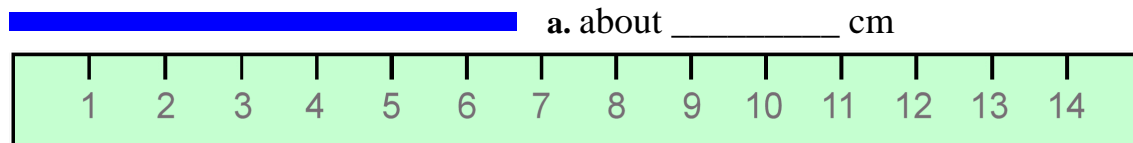
This pencil is about 9 cm long. The end of the pencil is closer to 9 cm than to 8 cm.




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

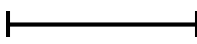
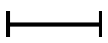

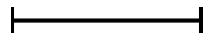
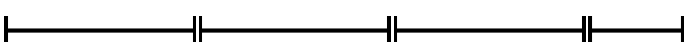
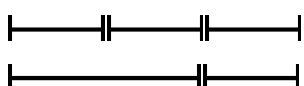
b. 3 cm long

c. 12 cm long

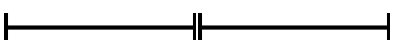


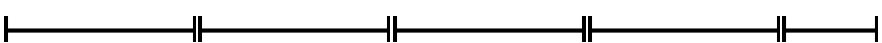
8. Find some small objects. First GUESS how long or tall they are. Then measure. If the item is not exactly so-many centimeters long, then measure it to the nearest centimeter and write “about” before the centimeter-amount, such as *about 8 cm*.

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

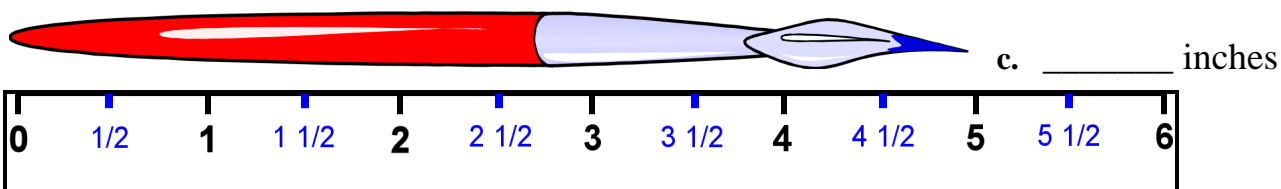
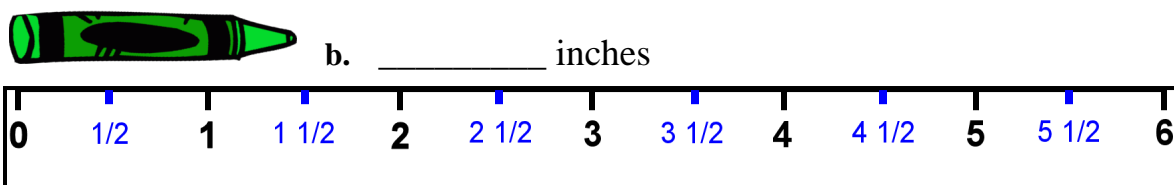
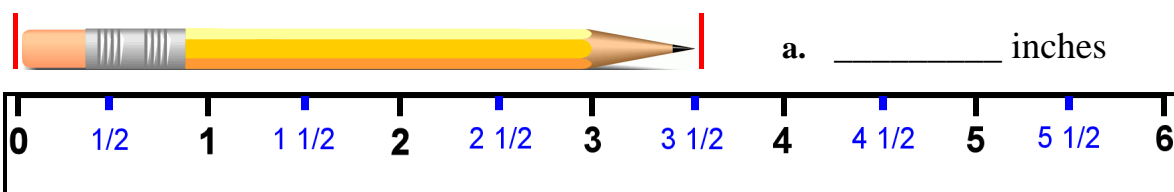
Inches and Half-Inches

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

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?



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:

$$\begin{array}{r} 612 \\ - 171 \\ \hline 441 \end{array}$$

Puzzle form:

$$\begin{array}{r} \square 1 \square \\ - 1 \square 1 \\ \hline 441 \end{array}$$

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

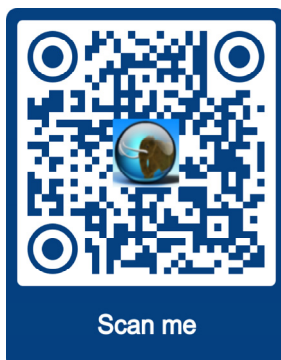
Further Resources on the Internet

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>

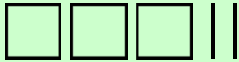


Sample worksheet from
<https://www.mathmammoth.com>

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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? _____

→

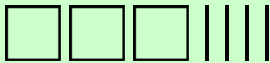


→

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

→

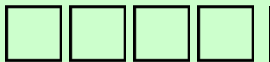


→

_____ hundreds + _____ tens

Take away 180. What is left? _____

b.



410

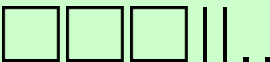
→

→

_____ 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

3	15	7
hundreds	tens	ones
– 2	8	2
hundreds	tens	ones
<hr/>		
1	7	5
hundreds	tens	ones

b. 7 hundreds 2 tens 1 one \Rightarrow

hundreds	tens	one
– 3	6	1
hundreds	tens	one
<hr/>		
hundred	tens	ones

c. 3 hundreds 2 tens 0 ones \Rightarrow

hundreds	tens	ones
– 2	5	0
hundreds	tens	ones
<hr/>		
hundred	tens	ones

d. 7 hundreds 0 tens 6 ones \Rightarrow

hundreds	tens	ones
– 6	2	2
hundreds	tens	ones
<hr/>		
hundred	tens	ones

e. 8 hundreds 0 tens 3 ones \Rightarrow

hundreds	tens	ones
– 5	3	1
hundreds	tens	one
<hr/>		
hundred	tens	ones

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

hundreds	tens	ones
– 2	8	2
hundreds	tens	ones
<hr/>		
hundred	tens	ones

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?

+		

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

a.

$80 + 40 = \underline{\hspace{2cm}}$

$780 + 40 = \underline{\hspace{2cm}}$

b.

$90 + 90 = \underline{\hspace{2cm}}$

$240 + 50 = \underline{\hspace{2cm}}$

c.

$690 + 50 = \underline{\hspace{2cm}}$

$470 + 80 = \underline{\hspace{2cm}}$

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



+		

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.

a. $15 - 7 = \underline{\hspace{2cm}}$ $55 - 7 = \underline{\hspace{2cm}}$	b. $13 - 5 = \underline{\hspace{2cm}}$ $93 - 5 = \underline{\hspace{2cm}}$	c. $82 - 77 = \underline{\hspace{2cm}}$ $45 - 41 = \underline{\hspace{2cm}}$
d. $80 - 71 = \underline{\hspace{2cm}}$ $100 - 95 = \underline{\hspace{2cm}}$	e. $56 - 40 = \underline{\hspace{2cm}}$ $56 - 43 = \underline{\hspace{2cm}}$	f. $78 - 35 = \underline{\hspace{2cm}}$ $33 - 4 = \underline{\hspace{2cm}}$

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?

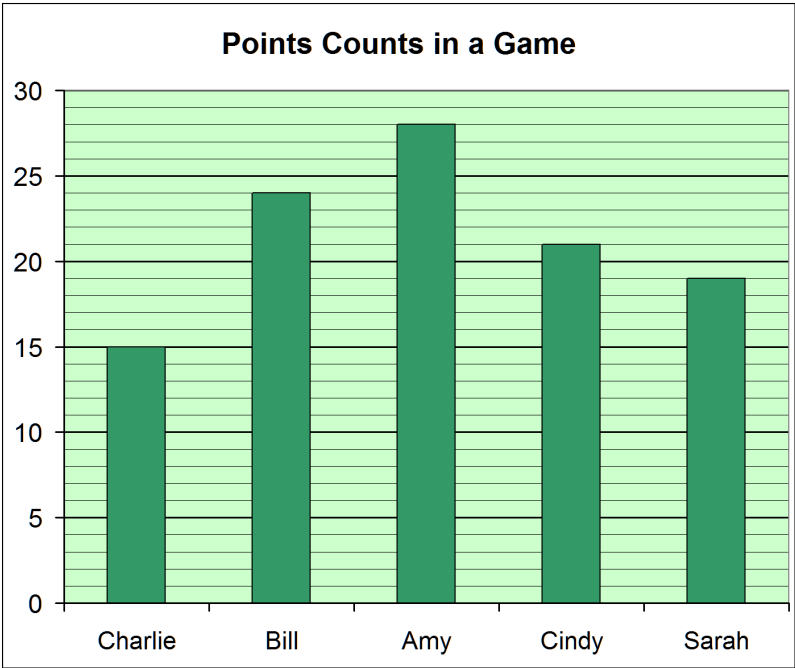
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- e. Olivia did 26 jumping jacks, which was 14 fewer jumping jacks than what her brother Aaron did.
How many jumping jacks did Aaron do?

<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

A square puzzle grid consisting of 12 circles arranged in a 4x4 grid. The circles are connected by horizontal and vertical lines, forming a square frame. The connections are as follows: Top row (4 circles), Second row (4 circles), Third row (4 circles), Bottom row (4 circles). Horizontal connections: (1,1)-(1,2), (1,2)-(1,3), (1,3)-(1,4), (2,1)-(2,2), (2,2)-(2,3), (2,3)-(2,4), (3,1)-(3,2), (3,2)-(3,3), (3,3)-(3,4), (4,1)-(4,2), (4,2)-(4,3), (4,3)-(4,4). Vertical connections: (1,1)-(2,1), (2,1)-(3,1), (3,1)-(4,1), (1,2)-(2,2), (2,2)-(3,2), (3,2)-(4,2), (1,3)-(2,3), (2,3)-(3,3), (3,3)-(4,3), (1,4)-(2,4), (2,4)-(3,4), (3,4)-(4,4).

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

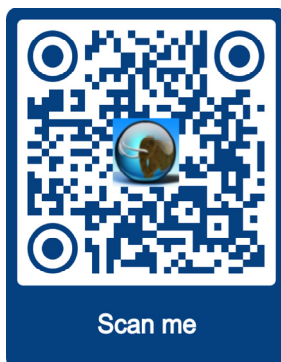
Practice making change with coins and bills (banknotes) in this online game! You are shown an item that someone buys, its price, and how much they give, and you click on coins/bills to make the correct change.

<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¢





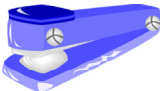





10¢







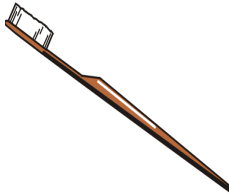

The clerk gives you back the *difference* between the price and what you paid.

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>   <p>Price: 22¢ _____ ¢ _____ ¢</p>	<p>f. You give: Your change:</p>   <p>Price: 11¢ _____ ¢ _____ ¢</p>
<p>g. You give: Your change:</p>   <p>Price: 60¢ _____ ¢ _____ ¢</p>	<p>h. You give: Your change:</p>   <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

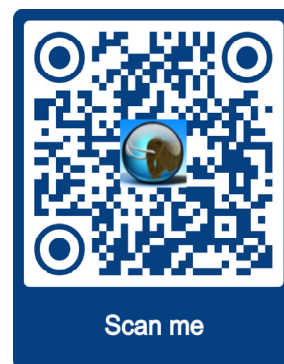
Practice filling in the multiplication tables chart online! You can customize the grid to your student's needs by having certain tables to be pre-filled or grayed out. For this level, you could choose only the tables of 1, 2, 5, and 10, or if your student likes exploring or is advanced, choose other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

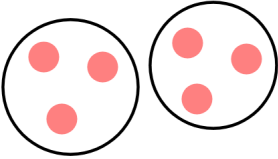
Sample worksheet from
<https://www.mathmammoth.com>

Many Times the Same Group

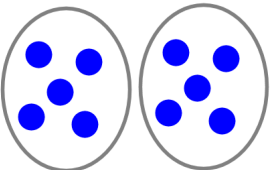
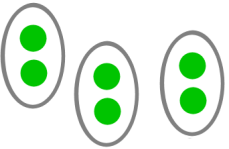
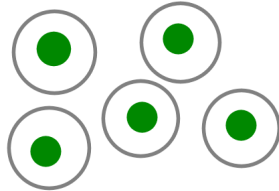
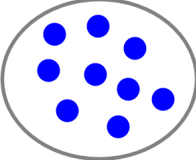
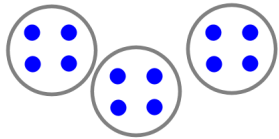

1. Write.

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.

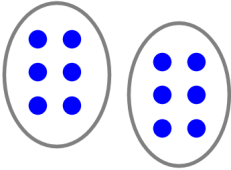
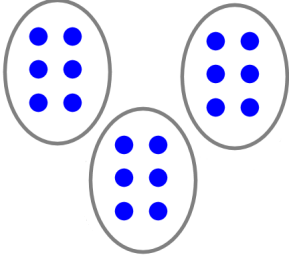
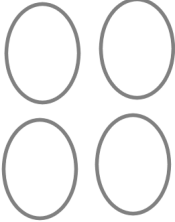


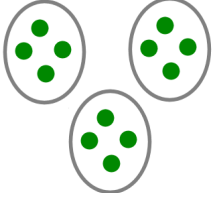
 a. <u>2</u> times <u>5</u>	 b. _____ times _____	 c. _____ times _____
 d. _____ times _____	 e. _____ times _____	 f. _____ times _____

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

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

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>