

math

# MAMMOTH

## Grade 2- B Worktext

**T**hree-digit numbers

**M**easuring

**R**egrouping in  
addition and  
subtraction

**M**oney

**I**ntroduction to multiplication



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# Foreword

Math Mammoth Grade 2-A and Grade 2-B worktexts comprise a complete math curriculum for the second grade mathematics studies. This curriculum is aligned to the Common Core standards. The four 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 within 100, 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 (chapter 2), money (chapter 9), introduction to multiplication (chapter 10), and bar graphs and picture graphs (in various chapters).

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.

When you use these two books as your only or main mathematics curriculum, they 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 geometry, clock, and money sections in a different order. For the chapter on measuring, the child should be familiar with three-digit numbers.

This might even be advisable if your child is “stuck” on some concept, or is getting bored. Sometimes the brain “mulls it over” in the background, and the concept he/she was stuck on can become clear after a break.

Math Mammoth aims to concentrate on a few major topics at a time, and study them in depth. This is totally opposite to the continually spiraling step-by-step curricula, in which each lesson typically is about a different topic from the previous or next lesson, and includes a lot of review problems from past topics.

This does not mean that your child wouldn’t need occasional review. However, when each major topic is presented in its own chapter, this gives you more freedom to plan the course of study *and* choose the review times yourself. In fact, I totally encourage you to plan your mathematics school year as a set of certain topics, instead of a certain book or certain pages from a book.

For review, the download version includes an html page called *Make\_extra\_worksheets\_grade2.htm* that you can use to make additional worksheets for computation or for number charts. You can also simply reprint some already studied pages. Also, chapter 3, which practices addition and subtraction facts within 18, contains a lot of pages with problems, so you can choose to “save” some of them for later review.

*I wish you success in your math teaching!*

*Maria Miller, the author*

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# Chapter 6: Three-Digit Numbers

## Introduction

The sixth chapter of *Math Mammoth Grade 2* deals with three-digit numbers, or numbers up to one thousand.

The first lesson presents three-digit numbers with hundred-flats, ten-pillars, and one-cubes. Next we study three-digit numbers on a number line. In the lesson Forming Numbers—and Breaking Them Apart the child practices separating three-digit numbers into the different “parts”: hundreds, tens, and ones. These first three lessons provide the basis for understanding three-digit numbers and place value.

Next we study Skip-Counting by Tens, and soon also by twos and fives. Then we compare and order three-digit numbers.

After this, the lessons change to mental math. First we study Adding and Subtracting Whole Hundreds mentally. Students practice completing the next hundred (problems such as  $260 + \underline{\quad} = 300$ ). Then it is time to add and subtract whole tens mentally. Along the way students also solve word problems and other types of problems.

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

### The Lessons

	page	span
Three-Digit Numbers .....	9	4 pages
Hundreds on the Number Line .....	13	2 pages
Forming Numbers—and Breaking Them Apart .....	15	2 pages
Skip-Counting by Tens .....	17	3 pages
More Skip-Counting .....	20	2 pages
Which Number Is Greater? .....	22	3 pages
Comparing Numbers and Some Review .....	25	3 pages
Add and Subtract Whole Hundreds .....	28	2 pages
Practice with Whole Hundreds .....	30	3 pages
Completing the Next Hundred .....	33	3 pages
Adding Whole Tens .....	36	3 pages
Subtract Whole Tens .....	39	3 pages
Patterns and Problems .....	42	3 pages
Bar Graphs and Pictographs .....	45	4 pages
Mixed Review .....	49	2 pages
Review .....	51	3 pages

# Helpful Resources on the Internet

Use these free online resources to supplement the “bookwork” as you see fit.

## Base Blocks from the National Library of Virtual Manipulatives

Place enough hundred-flats, ten-sticks, and one-blocks into the work area to show given numbers. Choose “Columns = 3” to restrict the program to three-digit numbers.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_152\\_g\\_1\\_t\\_1.html?from=category\\_g\\_1\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_152_g_1_t_1.html?from=category_g_1_t_1.html)

## Place Value to Thousands

Multiple choice questions; help the duck swing his golf club.

<http://www.toonuniversity.com/flash.asp?err=496&engine=5>

## Cookie Dough

Either spell the number in words or write the digits.

<http://www.funbrain.com/numwords/index.html>

## Inequalities

Arrange the digits to make two numbers so that the comparison is true. Use six digits for two 3-digit numbers.

<http://www.primarygames.co.uk/PG5/Inequal/sidequal.html>

## Naming Numbers

These pages teach number naming skills covered in K8 math courses. Each page has an explanation, interactive practice and challenge games about naming numbers.

<http://www.aaamath.com/B/nam.htm>

## Mostly Postie

Drag the parcel onto the scales, then enter the value shown to deliver your letter or parcel. Practices counting in 10s and 100s

<http://www.ictgames.com/mostlyPostie.html>

## Helipad Hops

Read the “number” of the SOS message, add/subtract to make it the nearest whole ten, and click on the whole ten helipad where the helicopter should land.

<http://www.ictgames.com/helipad%20hops7.html>

## Place Value at AAAMath.com

Read, practice, and play with 3-digit numbers.

<http://www.aaaknow.com/plc21ax2.htm>

## Line Dry Game

Fill in a missing number on the clothes line based on different skip counting patterns.

[www.fuelthebrain.com/Game/play.php?ID=15](http://www.fuelthebrain.com/Game/play.php?ID=15)

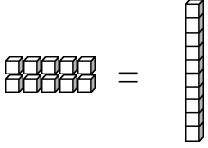
## Thatquiz.org Quiz for Graphs

A 10-question quiz involving bar graphs and pictographs.

<http://www.thatquiz.org/tq-5/?-j40v0h-l1-p0>

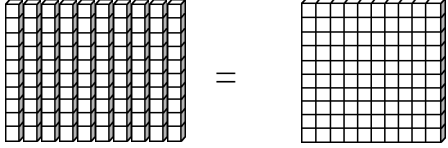
# Three-Digit Numbers

Ten ones make a ten:



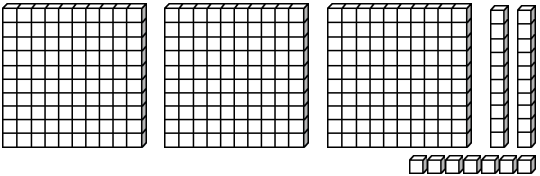
10 ones = 10

Ten ten-pillars make ONE HUNDRED:



10 tens = 100

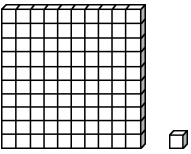
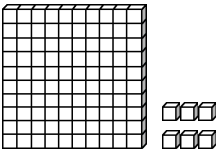
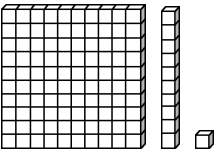
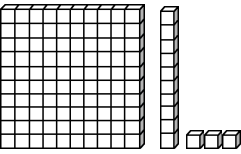
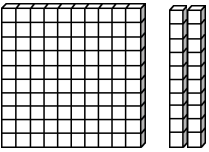
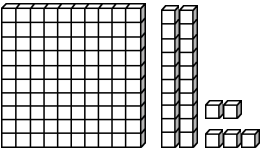
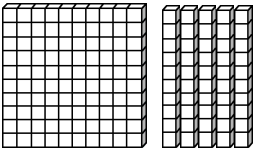
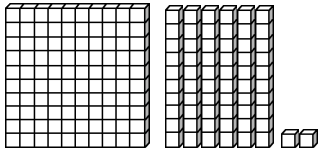
Write hundreds, tens, and ones in their own columns:



hundreds	tens	ones
3	2	7

three hundred twenty-seven

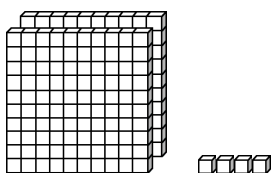
1. Count the ones, tens, and hundreds, and fill in the missing parts.

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

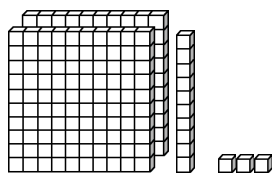
a. two hundred  
four



hundreds   tens   ones

2	0	4
---	---	---

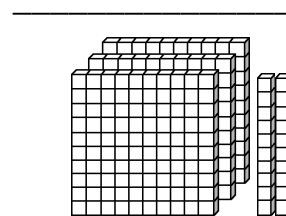
b. two hundred  
thirteen



hundreds   tens   ones

--	--	--

c. \_\_\_\_\_

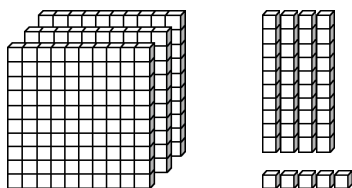


hundreds   tens   ones

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d. \_\_\_\_\_

\_\_\_\_\_

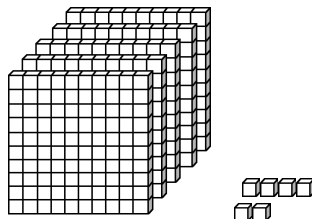


H   T   O

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e. \_\_\_\_\_

\_\_\_\_\_

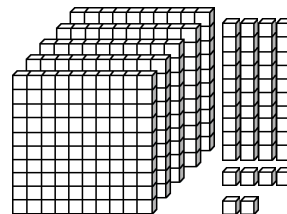


H   T   O

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f. \_\_\_\_\_

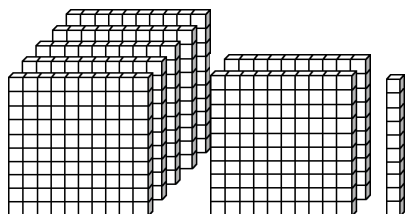
\_\_\_\_\_



H   T   O

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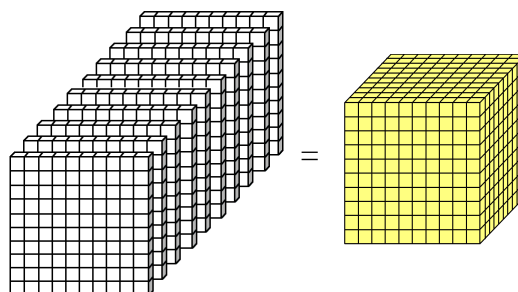
g. \_\_\_\_\_



H   T   O

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h. Ten hundreds = One thousand

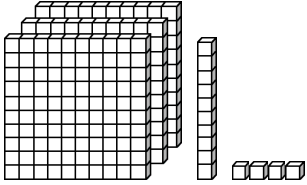


Th   H   T   O

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

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

a.

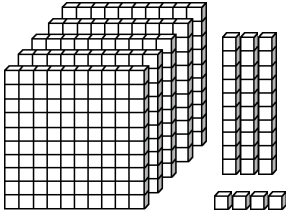


\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

b.

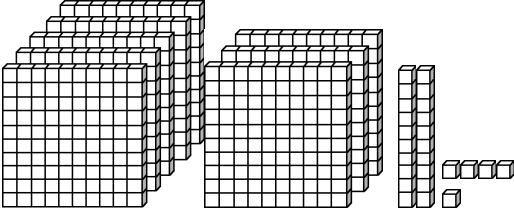


\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

c.

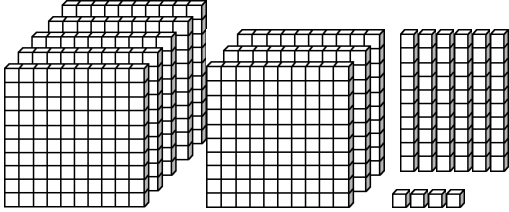


\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

d.



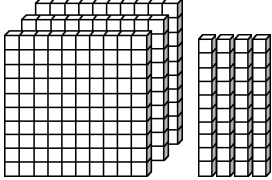
\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

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

e.



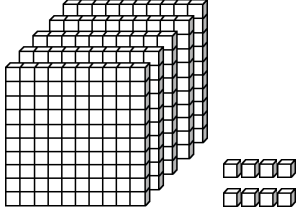
\_\_\_\_\_ + \_\_\_\_\_ + 0

H      T      O

--	--	--

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

f.



\_\_\_\_\_ + 0 + \_\_\_\_\_

H      T      O

--	--	--

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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:

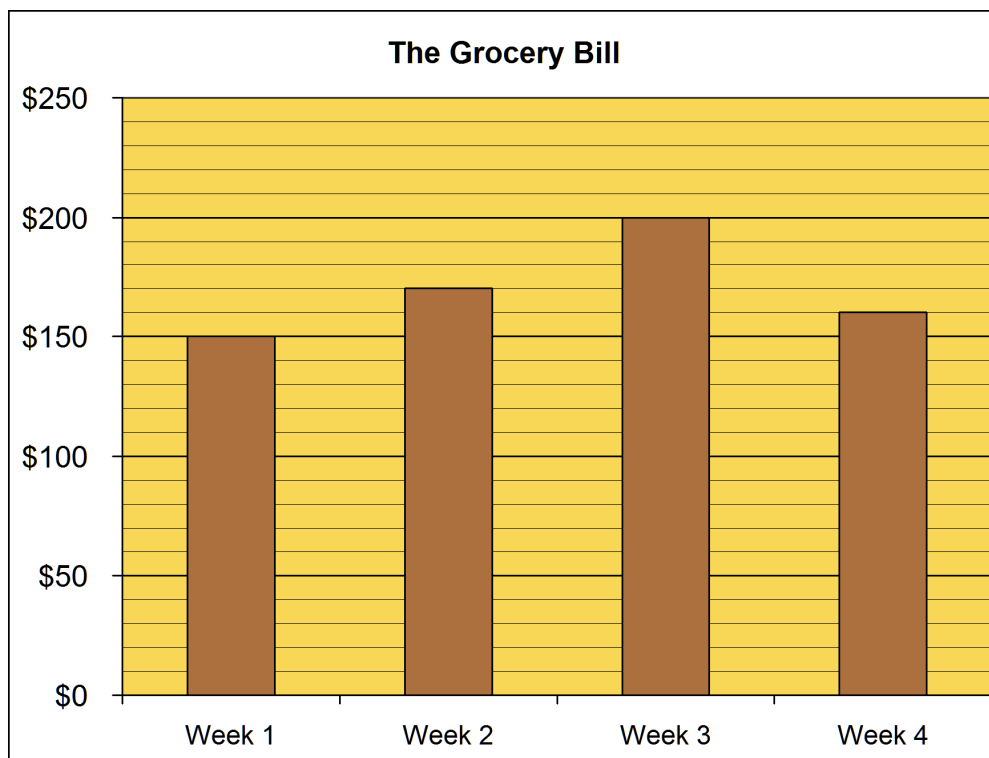
Then, Dan got 100 more points and Bill got 30 more points (Jim got none).

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

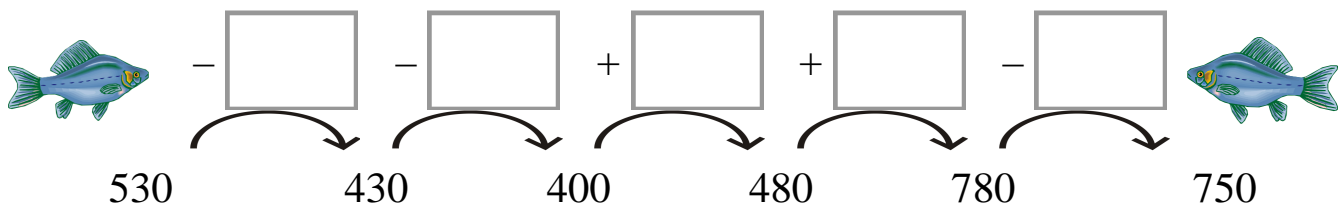
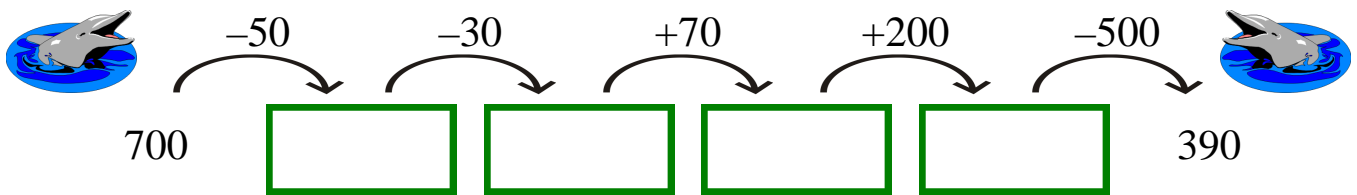
2. The bar graph shows how much money the Riley family spent for groceries in four different weeks.
- Mark above each bar how much they spent for groceries in dollars.
  - How much more did they pay for week 3 than for week 4?
  - How much more did they pay for week 2 than for week 1?



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

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

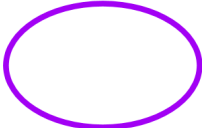


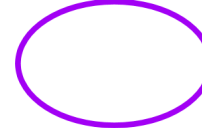
$770 + 30 = \underline{\hspace{2cm}}$



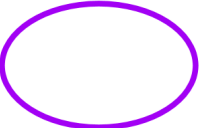

$770 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

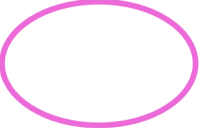
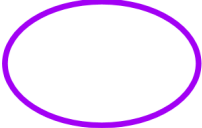

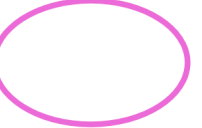
$770 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

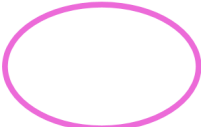
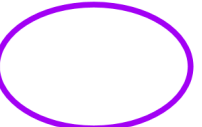


$770 + \underline{\hspace{1cm}} = \underline{\hspace{2cm}}$

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	

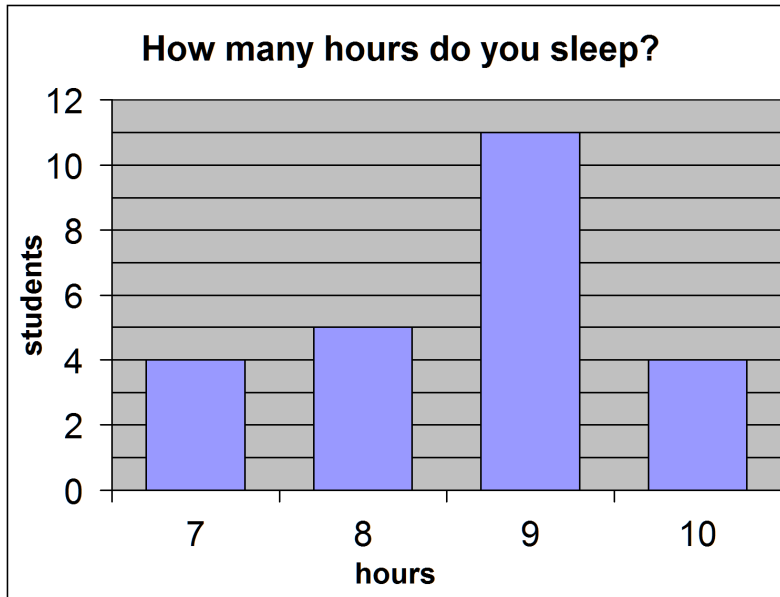
What was subtracted is missing:	i. 1000 -  = 700	j. 740 -  = 40
	k. 667 -  = 607	l. 999 -  = 299


Find what number goes into the oval!		<b>Puzzle Corner</b>
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.



- How many students slept 8 hours last night?
- How many students slept 10 hours last night?
- How many more* students slept 9 hours than the ones who slept 10 hours?
- A school nurse said that children need to sleep well for at least 8 hours. How many students had slept *less than* 8 hours last night?
- How many students had slept *at least* 8 hours last night?
- 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 student 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 the students do not yet study conversions between the units.

The lessons on measuring weight have several activities to do at home 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 are never forgotten.

The concrete activities we do in second grade are laying an important foundation for familiarizing the students with measuring units. In third grade, we will study volume later grades, the study of measuring turns toward conversions between the different units.

### The Lessons

	page	span
Measuring to the Nearest Centimeter .....	56	3 pages
Inches and Half-Inches .....	59	3 pages
Some More Measuring .....	62	3 pages
Feet and Miles.....	65	3 pages
Meters and Kilometers .....	68	2 pages
Weight in Pounds .....	70	2 pages
Weight in Kilograms .....	72	2 pages
Mixed Review .....	74	3 pages
Review .....	77	1 page

# Helpful Resources on the Internet

*Use these free online resources to supplement the “bookwork” as you see fit.*

## Measuring Scales

An interactive scales. You can put weights on it, change the maximum and the interval, and thus show the student how to read the scales.

[http://www.rsc-northwest.ac.uk/acl/eMagArchive/RSCeMag0910/FunctionalSkillsResources/measuring\\_scales.html](http://www.rsc-northwest.ac.uk/acl/eMagArchive/RSCeMag0910/FunctionalSkillsResources/measuring_scales.html)

## Scales Reader

Practice reading the scales in grams and/or kilograms.

<http://www.ictgames.com/weight.html>

## Measure It!

Click on the ruler to measure a red bar.

<http://onlineintervention.funbrain.com/measure/index.html>

## Reading Scales

Helps teachers to illustrate a variety of measuring devices and how to read them.

<http://www.teacherled.com/2009/02/18/reading-scales-2/>

## Reading a tape measure worksheets

Worksheet generator - you can choose to hat accuracy to measure - inches, or inches & feet.

[http://themathworksheetsite.com/read\\_tape.html](http://themathworksheetsite.com/read_tape.html)

## Inchy Picnic Game

Measure with a ruler to find how many inches Andy Ant needs to go.

<http://www.fuelthebrain.com/Game/play.php?ID=4>

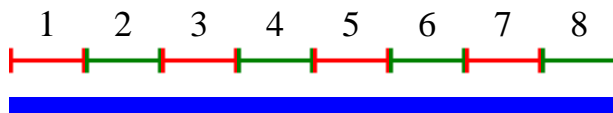
# Measuring to the Nearest Centimeter

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


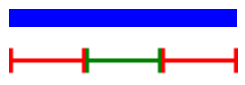


This line is 1 centimeter long: 

A centimeter is written shortly as "cm."

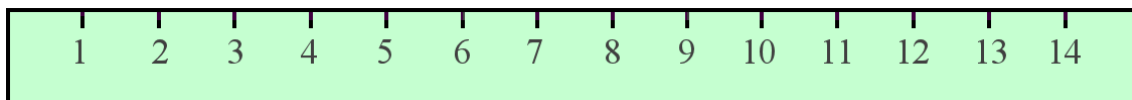
The blue line on the right is 8 cm long. →



1. How many centimeters long are these lines?

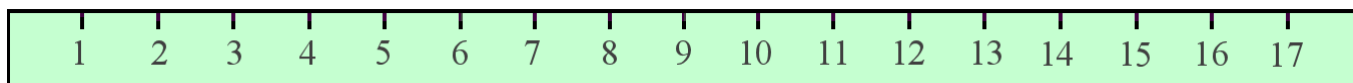
<p>a.  _____ cm</p>	<p>b.  _____ cm</p>
<p>c.  _____ cm</p> <div style="border: 1px solid black; background-color: #e0ffe0; padding: 5px; margin: 5px 0;"> <p style="text-align: center;">1   2   3   4   5   6   7   8   9   10   11   12   13   14</p> </div>	
<p>d.  _____ cm</p>	

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.



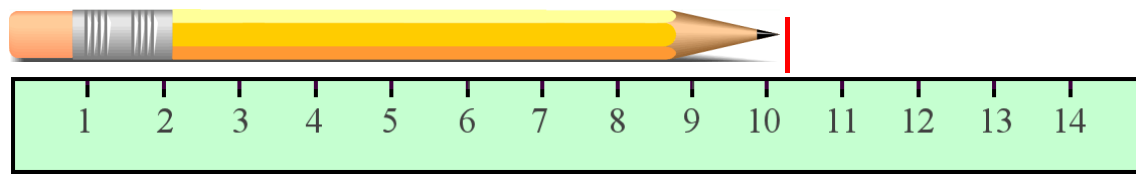
a. How much longer is pencil #1 than pencil #2? \_\_\_\_\_ cm

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

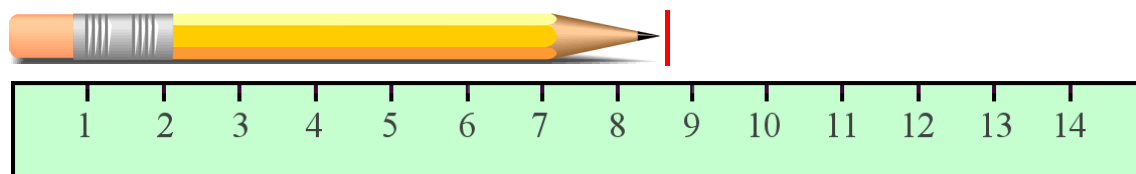


Most things are NOT exactly a certain number of whole centimeters. You can measure them to the nearest centimeter.

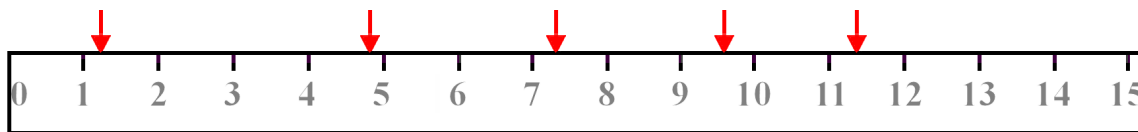
The pencil below is a little over 10 cm long. It is *about 10 cm long*.



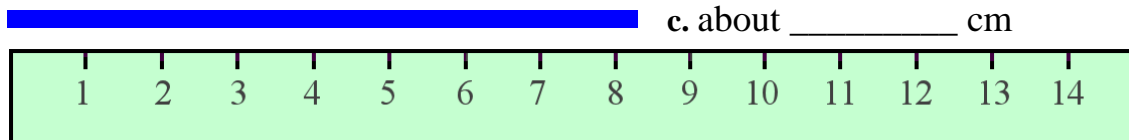
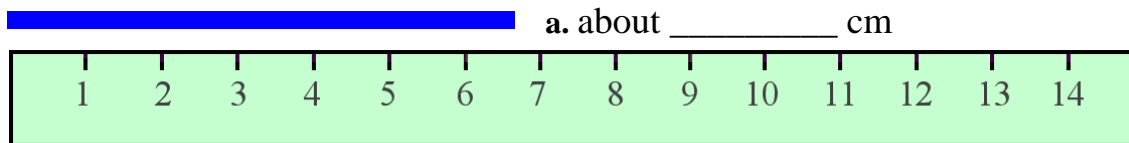
This pencil is about 9 cm long. The end of the pencil is closer to 9 cm than to 8 cm.







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


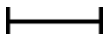
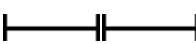
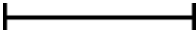
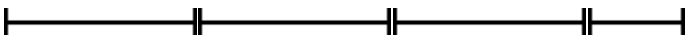
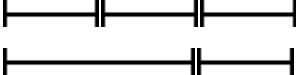
c. 12 cm long

d. 17 cm long

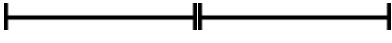
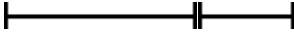
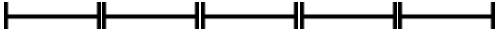

8. Find some small objects. First GUESS how long or tall they are. Then measure. If the item is not exactly so-many centimeters long, then measure it to the nearest centimeter and write “about” before your cm-number, such as *about 8 cm*.

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

## Inches and Half-Inches

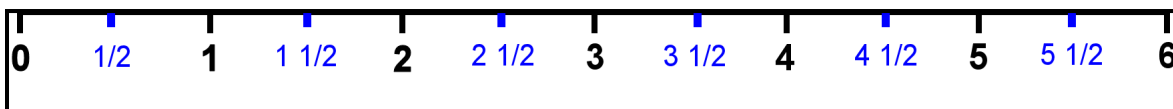
 This line is 1 inch long.  This line is 1/2 inch long.	 Two half-inches  make an inch!
 <p>3 inches and a 1/2-inch = 3 1/2 inches (three and a half inches)</p>	 <p>three half-inches = 1 1/2 inches (one and a half inches)</p>


1. How long of a train of inches and half-inches are end-to-end?

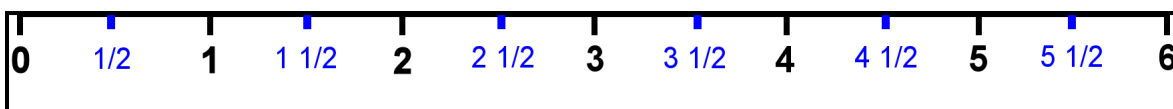
- a.  \_\_\_\_\_ inches
- b.  \_\_\_\_\_ inches
- c.  \_\_\_\_\_ inches
- d.  \_\_\_\_\_ in.

2. How long are these things in inches?

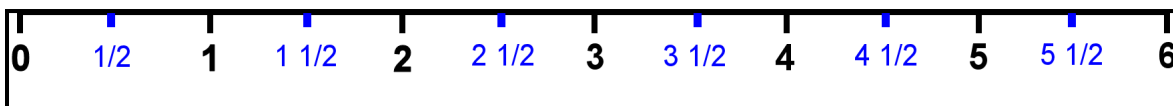
 a. \_\_\_\_\_ inches



 b. \_\_\_\_\_ inches



 c. \_\_\_\_\_ inches



You can cut out the ruler above and tape it on an existing ruler or cardboard!

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## Chapter 8: Regrouping in Addition and Subtraction

### Introduction

The eight chapter of *Math Mammoth Grade 2* deals with regrouping in addition (a.k.a. carrying) and in subtraction (a.k.a. borrowing).

In the first lesson, the student adds three-digit numbers, regrouping in tens, but there is no regrouping in hundreds. Students already know how to regroup two-digit numbers so this lesson only extends that knowledge to numbers that have three digits.

In the next lesson students regroup ten tens as a hundred (or carry to the hundreds). This is first illustrated with visual models. You can do the exercises that include visual models with manipulatives instead (base ten blocks), if you prefer.

Then we study regrouping twice: 10 ones form a new ten, and then 10 tens form a new hundred. Again, students work first with visual models, with the aim of helping them to understand the concept itself. Then, they do the process with numbers only, adding in columns.

Next we study regrouping in subtraction, starting with two-digit numbers. First, students learn to break 1 ten into 10 ones. For example, 5 tens 4 ones is written as 4 tens 14 ones—one ten gets “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 students have mastered that, then it is time to use regrouping in subtraction problems and learn the traditional way of subtracting in columns (the numbers are written under each other).

Then we study word problems with more and fewer, and also several techniques or "tricks" for mental subtraction. The word problems in the chapter require both addition and subtraction. I do not like putting only subtraction word problems to a lesson that is about subtraction. Students need to practice recognizing whether a problem requires addition or subtraction, thus each set of word problems typically includes both kinds.

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

1. Regrouping 1 ten as 10 ones, such as is needful for  $546 - 229$ .
2. Regrouping 1 hundred as 10 tens, such as is needful for  $728 - 441$ .
3. Regrouping two times (1 ten as 10 ones, and 1 hundred as 10 tens), such as is needful for  $725 - 448$ .
4. Regrouping with zero tens, such as is needful for  $405 - 278$ . Here, first we regroup 1 hundred as 10 tens, then 1 ten as 10 ones.

In 2nd grade, we ONLY study cases (1) and (2) from the list above. The other two will be studied in third grade. Again, students first practice the regrouping process with visual models. You could use base-ten blocks instead.

In the end of the chapter, students 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.



## The Lessons

	page	span
Adding 3-Digit Numbers in Columns .....	81	2 pages
Regrouping 10 Tens as a Hundred.....	83	4 pages
Add in Columns: Regrouping Twice .....	87	4 pages
Regrouping in Subtraction, Part 1 .....	91	3 pages
Regrouping in Subtraction, Part 2 .....	94	3 pages
Regrouping in Subtraction, Part 3 .....	97	3 pages
Word Problems .....	100	3 pages
Mental Subtraction, Part 1.....	103	2 pages
Mental Subtraction, Part 2 .....	105	3 pages
Regrouping One Ten as Ten Ones with 3-Digit Numbers .....	108	3 pages
Regrouping One Hundred as 10 Tens .....	111	4 pages
Graphs and Problems .....	115	2 pages
Euclid's Game .....	117	3 pages
Mixed Review .....	120	2 pages
Review .....	122	4 pages

## Helpful Resources on the Internet

Use these free online resources to supplement the “bookwork” as you see fit.

### Base Blocks Addition

A virtual manipulative that shows regrouping in addition. You can either solve addition problems that are provided, or create your own. “Lasso” with a mouse ten units, ten tens, or ten hundreds to regroup them. Choose “Columns = 3” to restrict the work to three-digit numbers.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_154\\_g\\_1\\_t\\_1.html?from=category\\_g\\_1\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_154_g_1_t_1.html?from=category_g_1_t_1.html)

### Base Blocks Subtraction

A virtual manipulative that helps teach borrowing in subtraction. Choose "Create Problem", then click on the red and blue blocks to create a problem. The number to be subtracted (the subtrahend) is illustrated by the RED blocks whereas the minuend is by the BLUE blocks. Click BEGIN problem to start solving. Drag a red block on top of a blue to “subtract” —they cancel each other. Drag bigger place values to the column on their right to “break them up”—in other words regroup or borrow. Choose “Columns = 3” to restrict the work to three-digit numbers.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_155\\_g\\_1\\_t\\_1.html?from=category\\_g\\_1\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_155_g_1_t_1.html?from=category_g_1_t_1.html)

### Regrouping in vertical addition

Shows hundreds, tens, ones as pictures, and asks you to regroup if needed.

<http://www.harcourtschool.com/justforkids/math/elab/samplepages/g3a02.htm>

### Callum's Addition Pyramid

Add the pairs of numbers to get a number on the next level and finally the top number. Choose the "hard" level to add two and three-digit numbers.

<http://www.amblesideprimary.com/ambleweb/mentalmaths/pyramid.html>

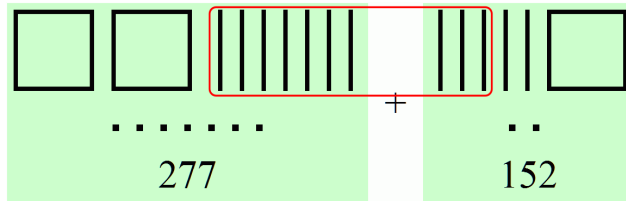
### Thatquiz.org Quiz for Graphs

A 10-question quiz involving bar graphs and pictographs.

<http://www.thatquiz.org/tq-5/?-j40v0h-l1-p0>

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# Regrouping 10 Tens as a Hundred



	hundreds	tens	ones
	1		
	2	7	7
+	1	5	2
	4	2	9

Ten TENS are grouped to make a new hundred!

In the TENS, there are 7 tens and 5 tens to add (277 has 7 tens, and 152 has 5 tens).

That is 12 tens. And, **10 tens makes a hundred!** So, we make a new hundred, and regroup that with the other hundreds, writing the new hundred with a little “1” in the hundreds column.

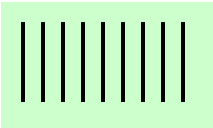
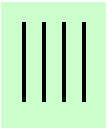
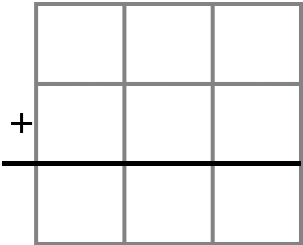
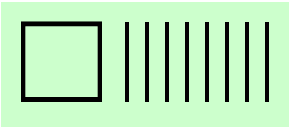
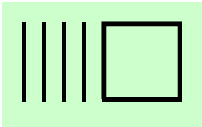
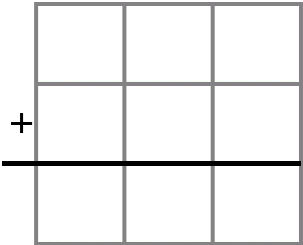
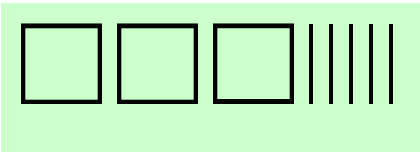
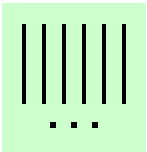
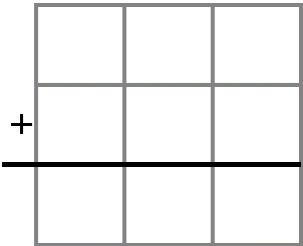
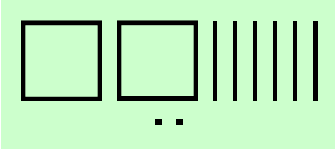
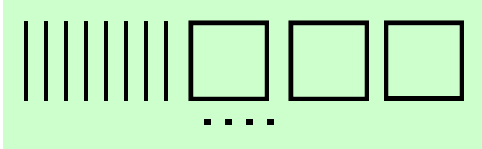
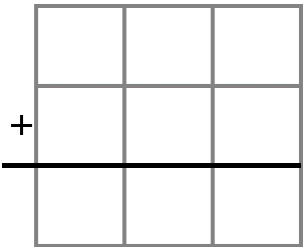
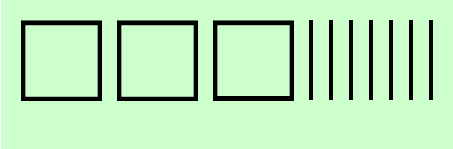
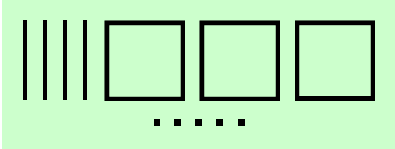
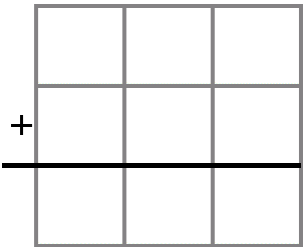
(We have 2 tens left over from that, and they stay in the tens column.)

1. Circle ten 10-sticks to make a new hundred. Write the addition.

Alternatively, you can do these exercises using base-ten blocks or similar manipulatives.

<p>a.  + </p> <p>_____ + _____ = _____</p>	<p>b.   + </p> <p>_____ + _____ = _____</p>
<p>c.  + </p> <p>_____ + _____ = _____</p>	<p>d.  + </p> <p>_____ + _____ = _____</p>
<p>e.  + </p> <p>_____ + _____ = _____</p>	<p>f.  + </p> <p>_____ + _____ = _____</p>

2. Write the numbers in the grid, and add. Regroup. You can circle 10 ten-sticks in the picture to help you. Alternatively, you can do these exercises using base-ten blocks or similar manipulatives.

<b>a.</b>	 +  90 + 40	
<b>b.</b>	 +  180 + 140	
<b>c.</b>	 +  350 + 63	
<b>d.</b>	 +  262 + 384	
<b>e.</b>	 +  370 + 345	

3. Add mentally. Compare the problems. Notice you get a NEW hundred from the tens!

a.	b.	c.
$70 + 40 = \underline{\hspace{2cm}}$	$50 + 60 = \underline{\hspace{2cm}}$	$90 + 50 = \underline{\hspace{2cm}}$
$170 + 40 = \underline{\hspace{2cm}}$	$150 + 60 = \underline{\hspace{2cm}}$	$290 + 50 = \underline{\hspace{2cm}}$
$270 + 40 = \underline{\hspace{2cm}}$	$250 + 60 = \underline{\hspace{2cm}}$	$490 + 50 = \underline{\hspace{2cm}}$

4. Add. You need to regroup 10 tens as a new hundred.

a. 
$$\begin{array}{r} 80 \\ + 30 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 220 \\ + 90 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 64 \\ + 53 \\ \hline \end{array}$$

d. 
$$\begin{array}{r} 370 \\ + 74 \\ \hline \end{array}$$

e. 
$$\begin{array}{r} 533 \\ + 282 \\ \hline \end{array}$$

f. 
$$\begin{array}{r} 67 \\ + 72 \\ \hline \end{array}$$

g. 
$$\begin{array}{r} 224 \\ + 193 \\ \hline \end{array}$$

h. 
$$\begin{array}{r} 464 \\ + 392 \\ \hline \end{array}$$

i. 
$$\begin{array}{r} 355 \\ + 374 \\ \hline \end{array}$$

j. 
$$\begin{array}{r} 787 \\ + 82 \\ \hline \end{array}$$

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

a.	b.	c.
$70 + 40 = \underline{\hspace{2cm}}$	$80 + 60 = \underline{\hspace{2cm}}$	$290 + 50 = \underline{\hspace{2cm}}$
$130 + 40 = \underline{\hspace{2cm}}$	$270 + 60 = \underline{\hspace{2cm}}$	$220 + 50 = \underline{\hspace{2cm}}$
$160 + 50 = \underline{\hspace{2cm}}$	$130 + 50 = \underline{\hspace{2cm}}$	$190 + 20 = \underline{\hspace{2cm}}$

6. What number was added? Think of regrouping!

a. 
$$\begin{array}{r} 167 \\ + 1\color{yellow}\square2 \\ \hline 359 \end{array}$$

b. 
$$\begin{array}{r} 240 \\ + 1\color{yellow}\square2 \\ \hline 422 \end{array}$$

c. 
$$\begin{array}{r} 391 \\ + 4\color{yellow}\square2 \\ \hline 813 \end{array}$$

d. 
$$\begin{array}{r} 653 \\ + 1\color{yellow}\square3 \\ \hline 846 \end{array}$$

e. 
$$\begin{array}{r} 375 \\ + 1\color{yellow}\square4 \\ \hline 559 \end{array}$$

7. Add and match the answers with the letters in the key. Then use the key to unravel the message.

**W**

$$\begin{array}{r} 233 \\ + 758 \\ \hline \end{array}$$

**L**

$$\begin{array}{r} 553 \\ + 346 \\ \hline \end{array}$$

**P**

$$\begin{array}{r} 597 \\ + 330 \\ \hline \end{array}$$

**T**

$$\begin{array}{r} 191 \\ + 751 \\ \hline \end{array}$$

**S**

$$\begin{array}{r} 282 \\ + 647 \\ \hline \end{array}$$

**E**

$$\begin{array}{r} 111 \\ + 729 \\ \hline \end{array}$$

**O**

$$\begin{array}{r} 772 \\ + 132 \\ \hline \end{array}$$

**A**

$$\begin{array}{r} 474 \\ + 343 \\ \hline \end{array}$$

**E**

$$\begin{array}{r} 217 \\ + 639 \\ \hline \end{array}$$

**I**

$$\begin{array}{r} 470 \\ + 399 \\ \hline \end{array}$$

**G**

$$\begin{array}{r} 216 \\ 116 \\ + 529 \\ \hline \end{array}$$

**N**

$$\begin{array}{r} 231 \\ 240 \\ + 432 \\ \hline \end{array}$$

**R**

$$\begin{array}{r} 85 \\ 205 \\ + 643 \\ \hline \end{array}$$

**F**



$$\begin{array}{r} 136 \\ 134 \\ + 589 \\ \hline \end{array}$$

**H**

$$\begin{array}{r} 105 \\ 301 \\ + 459 \\ \hline \end{array}$$

Key:

817	840	856	859	861	865	869	899	903	904	927	933	929	942	991

When the  and the  ran a race, who won?

942	865	840

856	899	856	927	865	817	903	942

, because

942	865	856

861	869	933	817	859	859	840

991	817	929

869	903

942	865	856

933	840	859	933	869	861	856	933	817	942	904	933

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# Review

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.

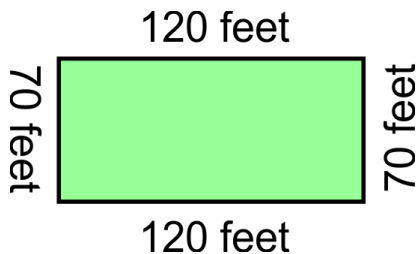
How much was the total cost?

+		

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

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

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.

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

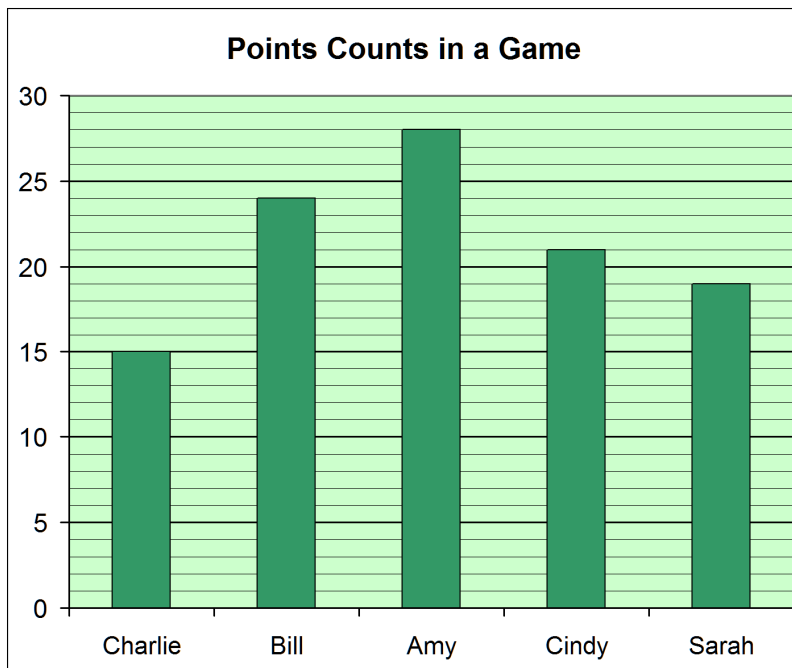
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e. Olivia did 26 jumping jacks, which was 14 fewer jumping jacks than what her brother Aaron did.  
How many jumping jacks did Aaron do?

<hr/>	

<hr/>	

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



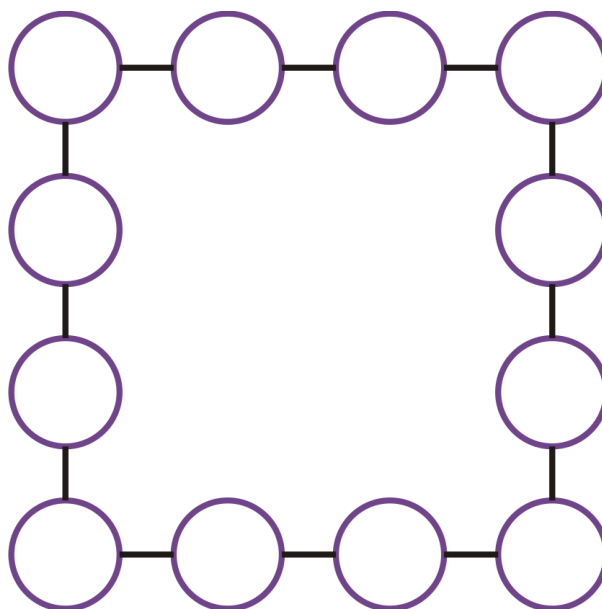
CHILD	POINTS
Charlie	15
Bill	
Amy	
Cindy	
Sarah	

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 going to the top corners are 7 and 6, and the numbers going to the bottom corners are 5 and 8.



Puzzle Corner

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# Chapter 9: Money

## Introduction

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

Lastly, students add small money amounts in columns (where numbers are written under each other). This topic requires that they have mastered regrouping in addition as has been studied in chapter 8.

You can make free worksheets for counting coins at [www.homeschoolmath.net/worksheets/money.php](http://www.homeschoolmath.net/worksheets/money.php), or using the worksheets generator that comes with the supportive materials of this curriculum.

### The Lessons

	page	span
Counting Coins Review .....	128	4 pages
Change.....	132	3 pages
Dollars .....	135	3 pages
Counting Change .....	138	2 pages
Adding Money Amounts .....	140	2 pages
Mixed Review .....	142	3 pages
Review .....	145	2 pages

# Helpful Resources on the Internet

*Use these free online resources to supplement the “bookwork” as you see fit.*

## **US Money Worksheets**

Count common US coins or bills. You can choose which coins/bills will be used, and how many coins/bills are shown at most. Other currencies (Euro, Canadian, Australian, British, and South African) are available at [www.homeschoolmath.net/worksheets](http://www.homeschoolmath.net/worksheets)

<http://www.homeschoolmath.net/worksheets/money.php>

## **Change Maker**

Determine how many of each denomination you need to make the exact change. Good and clear pictures! Playable in US, Canadian, Mexican, UK, or Australian money.

<http://www.funbrain.com/cashreg/index.html>

## **Using Money**

Drag the right amount of coins and bills (US) to the answer space to match the given amount. The pictures look a little fuzzy.

<http://www.mathcats.com/microworlds/usingmoney.html>

## **Counting Money Activity from Harcourt**

Count the coin value and type it into the box and click “Check”.

[http://www.hbschool.com/activity/counting\\_money/](http://www.hbschool.com/activity/counting_money/)

## **Cash Out**

Give the correct change by clicking on the bills and coins.

<http://www.mrnussbaum.com/cashd.htm>

## **Piggy bank**

When the coins fall from the top of the screen, choose those that add up to the given amount, and the piggy bank fills.

<http://fen.com/studentactivities/Piggybank/piggybank.html>

## **Coins and Medals from U.S. Mint**

History and pictures of the circulating coins, commemorative coins, Native American \$1 Coin Program, and the Presidential \$1 Coin Program. Learn also how coins are made and take a virtual tour around the mint.

<http://www.usmint.gov/kids/coinsMedals>

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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¢**



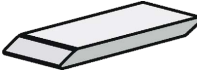

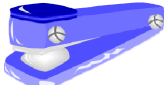





**10¢**

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



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

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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, you can study multiplication tables even further at this time.

### The Lessons

	page	span
Many Times the Same Group .....	149	3 pages
Multiplication and Addition .....	152	4 pages
Multiplying on a Number Line .....	156	3 pages
Multiplication Practice .....	159	2 pages
Mixed Review .....	161	2 pages
Review .....	164	2 pages

## Helpful Resources on the Internet

Use these free online resources to supplement the “bookwork” as you see fit.

### Math Dice Game for Addition and Multiplication

Instructions for three simple games with dice; one to learn the concept of multiplication, another to practice the times tables, and one more for addition facts.

<http://www.teachingwithtlc.blogspot.com/2007/09/math-dice-games-for-addition-and.html>

### Explore the Multiplication Table

This applet visualizes multiplication as a rectangle.

<http://www.mathcats.com/explore/multiplicationtable.html>

### Multiple Counting Practice

Click on the numbers on the grid to skip count.

<http://www.hsappserv.com/multiplecounting/multiplecounting/>

### Multiplication Memory Game

Click on corresponding pairs (problem-answer).

<http://www.dositey.com/addsub/memorymult.html>

### Multiplication Mystery

Drag the answer tiles to the right places in the grid as they are given, and a picture is revealed

<http://www.harcourtschool.com/activity/mult/mult.html>

### Multiplication.com Interactive Games

A bunch of online games just for the times tables.

[http://www.multiplication.com/interactive\\_games.htm](http://www.multiplication.com/interactive_games.htm)

### Skip Counting Game

Click the answer on the number line. You have 2 minutes to gain as many points as you can.

<http://www.mathsisfun.com/numbers/skip-counting-game.html>

### Skip Count Advanced

Choose the number to skip count by. Then try to hit the fruit with the correct number.

<http://www.sheppardsoftware.com/mathgames/earlymath/SkipCountAdvanced.htm>

### Counting Game

Choose a number for skip-counting. Then finish filling the number line before the time runs out.

<http://members.learningplanet.com/act/count/free.asp>

### Online Skip Counting Games

A collection of games for skip-counting.

<http://www.free-training-tutorial.com/skip-counting-games.html>

Sample worksheet from

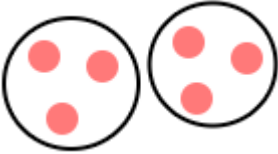
[www.mathmammoth.com](http://www.mathmammoth.com)

## Many Times the Same Group

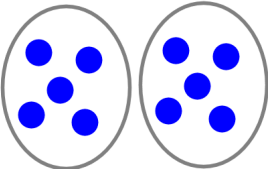
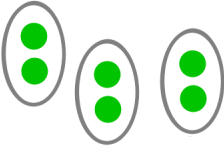
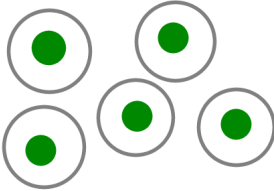
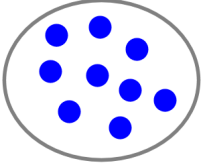
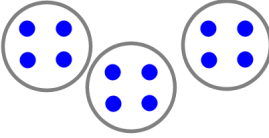
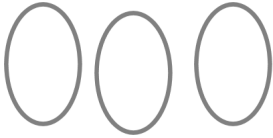
1. Write.

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 balls	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>

$5 \times 3$ This means “5 times a group of 3.” It is called <b>multiplication</b> .	$2 \times 7$ 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.”

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