

math

# MAMMOTH

## Grade 2-A Worktext International Version

**S**ome review, even and odd numbers, and doubling

**R**eading the clock

**A**ddition and subtraction facts within 0-18

**A**dding two-digit numbers

**G**eometry and fractions



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## Foreword

*Math Mammoth International Version Grade 2-A* and *Grade 2-B* worktexts comprise a complete maths curriculum for the second grade mathematics studies.

This curriculum is essentially the same as the version of Math Mammoth Grade 2 sold in the United States (US version), only customised for international use. The US version is aligned to the “Common Core” Standards, so it may not be properly aligned to the second grade standards in your country. However, you can probably find material for any missing topics in neighbouring grades. For example, let’s say multiplication tables are studied in grade or year 4 in your country. They are not found in Math Mammoth Grade 4. Instead, you will need to use Math Mammoth Grade 3-A to study them.

The International version of Math Mammoth differs from the US version in these aspects:

- The currency used in the money chapters in grades 1-3 is the Australian dollar. (The download version of this curriculum for grades 1-3 include the chapter on money for European, South African, Canadian, US, and British currencies.)
- The curriculum teaches the metric measurement units. Imperial units, such as inches and pounds, are not used.
- The spelling conforms to British international standards.
- Paper size is A4.

The four main areas of study for second grade are:

1. Understanding of the base-ten system within 1 000. This includes place value with three-digit numbers, skip-counting in fives, tens, and multiples of hundreds, tens, and ones (within 1 000). (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 metric 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-A, covers reading the clock (chapter 2), the basic addition and subtraction facts within 18 (chapter 3), regrouping in addition (chapter 4), and geometry (chapter 5). The rest of the topics are covered in the 2-B student worktext.

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. 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. For the chapter on measuring, the child should be familiar with three-digit numbers.

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 spiralling 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 revision problems from past topics.

This does not mean that your child would not need occasional revision. 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 revision 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 revision, 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 practises addition and subtraction facts within 18, contains a lot of pages with problems, so you can choose to “save” some of them for later revision.

*I wish you success in teaching maths!*

*Maria Miller, the author*

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# Chapter 1: Some Old, Some New

## Introduction

The first chapter of the *Math Mammoth Grade 2-A* contains some revision and some new topics.

In the first two lessons, we revise adding and subtracting two-digit numbers from first grade. Then students get to revise skip-counting using the 100-chart.

Next, the lesson *Fact Families* revises the connection between addition and subtraction, and introduces a new strategy for missing subtrahend problems (of the type  $\_\_ - 5 = 4$ ). In these problems, the student can *add* to find the missing total. This is an early prelude to algebraic thinking.

Then we go on to the “new”, starting with ordinal numbers, which are probably familiar from everyday language. Then, in the lesson *Subtracting Whole Tens*, students subtract *mentally* any number of whole tens from a two-digit number, such as  $72 - 40$ .

Even and odd numbers are presented in the context of equal sharing: if you can share that many objects evenly (equally), then the number is even. Students may need to use manipulatives (objects you can handle) to grasp this idea.

Then we study doubling and halving. Please do not skip the simple word problems included in these lessons — they are very important. Children need to learn to apply the concepts they have just learned. Also, if the student cannot solve simple word problems that involve doubling or halving, there is a good chance the student did not actually learn those concepts.

### The Lessons in Chapter 1

	page	span
Some Revision .....	11	2 pages
The 100-Chart and More Revision .....	13	3 pages
Fact Families.....	16	2 pages
Ordinal Numbers .....	18	2 pages
Even and Odd Numbers .....	20	2 pages
Doubling .....	22	3 pages
One-Half .....	25	2 pages
Adding With Whole Tens .....	27	3 pages
Subtracting Whole Tens .....	30	2 pages
Revision, Chapter 1 .....	32	2 pages

## Helpful Resources on the Internet

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

**Disclaimer:** These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.

### Number Cracker

Help Mr. Cracker obtain the secret code before the insidious Prof. Soup catches him by guessing what number comes next in a series of numbers.

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

### Squigly

Squigly is hiding in one of the apples. Click on the ordinal number that tells the order of Squigly's apple.

<http://www.primarygames.com/squigly/start.htm>

### Number Jump

Move the ball along the number line to smash the flies.

<http://www.carstensstudios.com/mathdoodles/numberjump.htm>

### Connect Sums

Click on the neighbouring die-faces/numbers/coins so that the points add up to the given target sum.

<http://www.carstensstudios.com/mathdoodles/connectsums.html>

### Sum Stacker

Drag dice from stack to stack until the sums of each stack equal the sums given.

<http://www.carstensstudios.com/mathdoodles/sumstacker.html>

### Froggy Hop

Find 10 more or 1 more of a given number.

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

### Fruit Shoot

Shoot a fruit with an even or odd number, whichever one your aim tells you. Three levels: 1-10, 1-20, and 1-100.

[http://www.sheppardsoftware.com/mathgames/earlymath/Fruit\\_shoot\\_odd\\_even.htm](http://www.sheppardsoftware.com/mathgames/earlymath/Fruit_shoot_odd_even.htm)

### Odd or Even?

Drag and drop the number cards to their correct place in the diagram (even or odd). Three difficulty levels (numbers 1-10, 1-30, or 1-100). Choose “Fun Games”.

<http://www.crickweb.co.uk/ks2numeracy-properties-and-ordering.html#>

### Story of Odd and Even

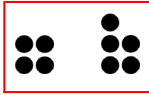
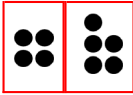
A simple story about two ladybugs named Odd and Even. It teaches even and odd within 1-10.

[http://www.primarygames.com/storybooks/even\\_odd/1.htm](http://www.primarygames.com/storybooks/even_odd/1.htm)








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# Fact Families

<p>When two addition and two subtraction facts use the same numbers, it is called a “<i>fact family</i>.”</p>	 $4 + 5 = 9$ $5 + 4 = 9$ $9 - 5 = 4$ $9 - 4 = 5$ <p>Notice the TOTAL. The subtraction sentences <i>start</i> with the total.</p>	 $4 + 5 = 9$ $5 + 4 = 9$ $9 - 5 = 4$ $9 - 4 = 5$ <p>Notice the PARTS. The two parts make up the total.</p>
<p>Remember that a subtraction starts with the <i>total</i>. This is how it looks if the <i>total</i> is missing in a subtraction:</p> $\square - 8 = 20$ <p>To find the total, just add the “parts” 20 and 8. We get <math>20 + 8 = 28</math>. So the subtraction was <math>28 - 8 = 20</math>.</p>		

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

<p>a.  </p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$	<p>b. <span style="border: 1px solid black; padding: 2px;">T</span>  </p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$	<p>c. <span style="border: 1px solid black; padding: 2px;">T</span> <span style="border: 1px solid black; padding: 2px;">T</span>  <span style="border: 1px solid black; padding: 2px;">T</span> <span style="border: 1px solid black; padding: 2px;">T</span></p> $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} + \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$
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2. Fill in the missing numbers. The four problems form a fact family.

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

<p>a. <math>\underline{\quad} + \underline{\quad} = \underline{\quad}</math>  <math>8 - 2 = 6</math></p>	<p>b. <math>\underline{\quad} + \underline{\quad} = \underline{\quad}</math>  <math>20 - 7 = 13</math></p>	<p>c. <math>\underline{\quad} + \underline{\quad} = \underline{\quad}</math>  <math>60 - 20 = 40</math></p>
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<p>When the first number is missing in a subtraction, it is the TOTAL that is missing. You can find the TOTAL by adding the two numbers (those are the “parts”).</p>	$\square - 6 = 2$ <p>The total is missing. 6 and 2 are the “parts”. So we add them.  <math>2 + 6 = 8</math>. The missing number is 8!</p>
<p>It is like “adding backwards”:</p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;"> <math display="block">\begin{array}{c} \leftarrow \text{Add.} \\ \square - 6 = 2 \\ \color{red}{8} \end{array}</math> </div> <div style="text-align: center;"> <math display="block">\begin{array}{c} \leftarrow \text{Add.} \\ \square - 3 = 20 \\ \color{red}{23} \end{array}</math> </div> </div>	

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

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

<p>a. <math>\square - 2 = 4</math>  <math>\square - 50 = 50</math>  <math>\square - 8 = 20</math></p>	<p>b. <math>\square - 7 = 80</math>  <math>60 + 4 = \square</math>  <math>16 + \square = 20</math></p>	<p>c. <math>9 - \square = 5</math>  <math>77 + \square = 78</math>  <math>\square - 9 = 60</math></p>
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<b>Puzzle Corner</b>	<p>Find the missing numbers. This time adding backwards will NOT work!</p>	
<p>a. <math>50 - \square = 10</math>  <math>33 - \square = 31</math></p>	<p>b. <math>100 - \square = 91</math>  <math>76 - \square = 72</math></p>	<p>c. <math>10 - \square - 2 = 1</math>  <math>9 - \square - 5 = 2</math></p>

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## Chapter 2: Clock Introduction

The second chapter of *Math Mammoth Grade 2-A* deals with reading the clock to the five-minute intervals, and finding simple time intervals.

It is helpful to have a practice clock, such as an alarm clock, where the student can turn the clock hands.

First, we practise telling time in the *hours:minutes* form (such as 10:20), and then using the colloquial phrases “to” and “past.”

Also studied are simple time intervals, or how many whole hours pass. When practising these, tell the student to imagine moving the hour hand on a clock. He/she can initially use a practice clock for this.

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

### The Lessons in Chapter 2

	page	span
Revision—Whole and Half Hours .....	37	1 page
The Minutes .....	38	3 pages
The Minutes, Part 2 .....	41	2 pages
Past and To in Five-Minute Intervals .....	43	3 pages
How Many Hours Pass? .....	46	2 pages
The Calendar: Weekdays and Months .....	48	3 pages
The Calendar: Dates .....	51	3 pages
Revision, Chapter 2 .....	54	1 page

### Helpful Resources on the Internet

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

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### What Time Will it Be?

Move the hands on the clock to show what time it will be after a certain amount of minutes.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_318\\_g\\_2\\_t\\_4.html](http://nlvm.usu.edu/en/nav/frames_asid_318_g_2_t_4.html)

### **Flashcard Clock**

Read the analogue and type in the time in digital form. Good graphics and fast response!  
[http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard\\_clock.htm](http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard_clock.htm)

### **Teaching Time**

Analogue/digital clock games and worksheets. Also an interactive “class clock” to demonstrate time.

<http://www.teachingtime.co.uk/>

### **Time-for-Time**

Resource site to learn about time: worksheets, games, quizzes, time zones.

<http://www.time-for-time.com/default.htm>

### **A Matter of Time**

Lesson plans for telling time, interactive activities, and some materials to print.

<http://learn.fi.edu/time/Journey/JustInTime/contents.html>

### **Elapsed Time Line**

This interactive tool shows two clocks where you can drag the fingers to set a “from” and “to” time, and a number line. You can demonstrate how to use a number line to calculate elapsed time.

<http://www.teacherled.com/2008/10/05/elapsed-time-line/>

### **Clockwise**

Plug in a time, and the clock runs to it, or the clock runs to a time and you type it in.

<http://www.shodor.org/interactivate/activities/clock2/index.html>

### **The Right Time**

A couple of interactive exercises about reading the clock.

<http://www.pitara.com/activities/math/time/time.asp?QNum=3>

### **What Time Is It?**

Look at the analogue clock and pick the digital clock that shows the same time.

<http://www.primarygames.com/time/start.htm>

### **That Quiz: Time**

Online quizzes for all time-related topics: reading the clock, time passed, adding/subtracting with time, conversion of time units, and time zones practice. The quizzes have many levels, can be timed or not, and include lots of options for customization. Easy to use and set up.

<http://www.thatquiz.org/tq-g/math/time>

### **Elapsed Time Worksheets**

Generate printable worksheets for elapsed time. You can practise the elapsed time, finding the starting time, or finding the ending time. The time interval can be to the accuracy of 1 minute, 5 minutes, 10 minutes, 15 minutes, 30 minutes, or whole hours.

<http://www.mathnook.com/elapsedtimegen.html>

### **On Time**

Set the clock's hands to the given time. Four different levels.

[http://www.sheppardsoftware.com/mathgames/earlymath/on\\_time\\_game1.htm](http://www.sheppardsoftware.com/mathgames/earlymath/on_time_game1.htm)

### **Clock Shoot**

A game where you need to click on the clock with the matching time (analogue/digital).

Three different levels: whole hours, half hours, or quarter hours.

[http://www.sheppardsoftware.com/mathgames/earlymath/clock\\_shoot.htm](http://www.sheppardsoftware.com/mathgames/earlymath/clock_shoot.htm)

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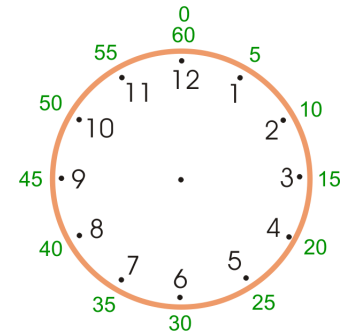


# The Minutes

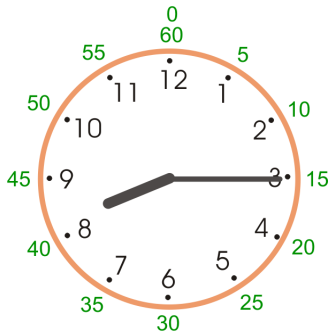
When the hour hand moves from one number to the next (from 1 to 2, or from 6 to 7, etc.), it takes one hour to do so.

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

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



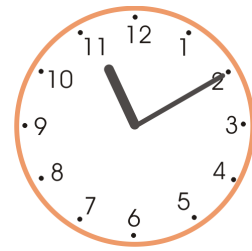
1 hour = 60 minutes.  
1/2 hour = 30 minutes.



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

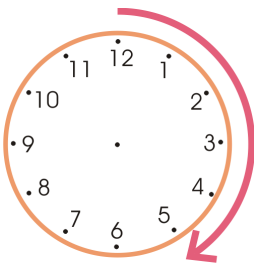


The hour hand is past 2.  
The minute hand is at 25.  
The time is 2:25.

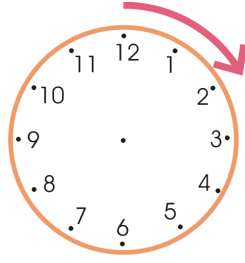


The hour hand is past 11.  
The minute hand is at 10.  
The time is 11:10.

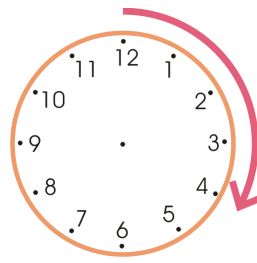
1. The arrow shows how much the minute hand travels. How many minutes pass?



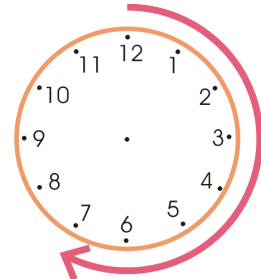
a. \_\_\_\_\_ minutes



b. \_\_\_\_\_ minutes

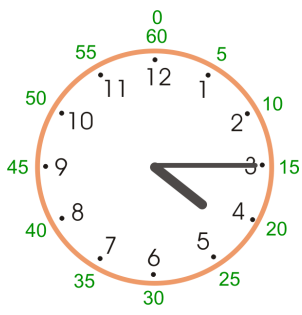
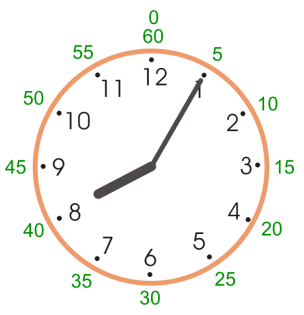





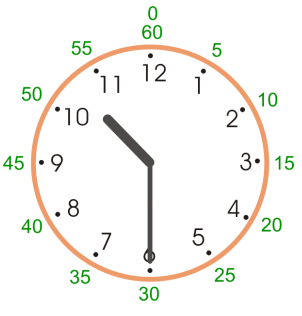


c. \_\_\_\_\_ minutes

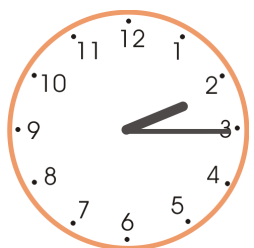
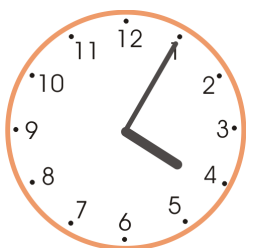
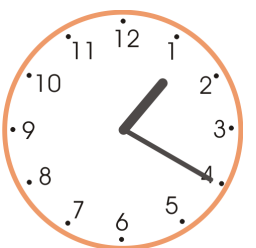
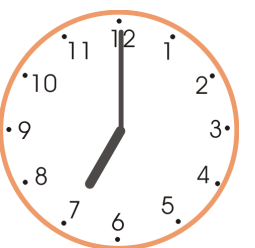

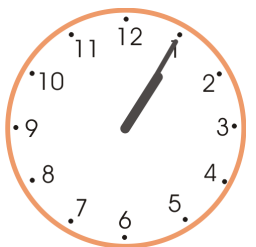

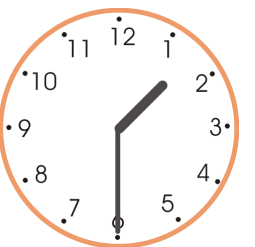


d. \_\_\_\_\_ minutes

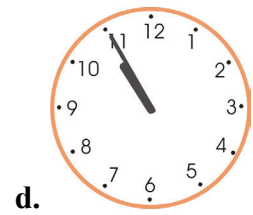
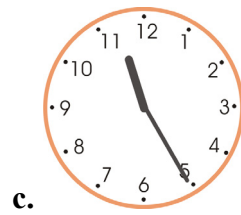
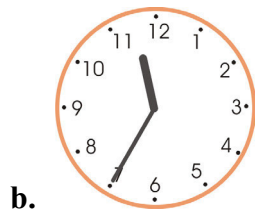
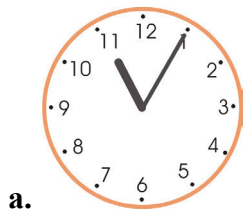
2. Write the time using the special clock that shows the numbers for hours and for minutes.

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


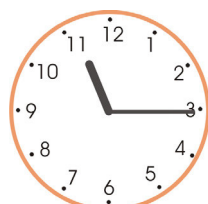
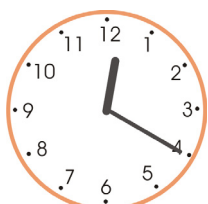
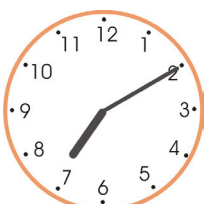
3. Write the time using the normal clock. Remember, the numbers for the minute hand are not shown, and they go by fives!

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


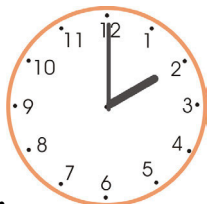


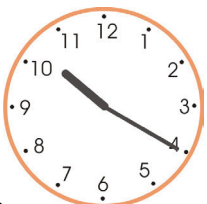
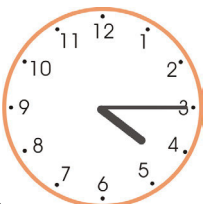
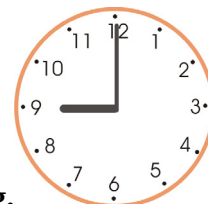

4. Find the clock that shows 11:25 and the clock that shows 11:05.



5. Write the time.

			
a. _____ : _____	b. _____ : _____	c. _____ : _____	d. _____ : _____

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

				
	a. _____ : _____	b. _____ : _____	c. _____ : _____	d. _____ : _____
5 min. later →	_____ : _____	_____ : _____	_____ : _____	_____ : _____
				
	e. _____ : _____	f. _____ : _____	g. _____ : _____	h. _____ : _____
5 min. later →	_____ : _____	_____ : _____	_____ : _____	_____ : _____

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# Chapter 3: Addition and Subtraction Facts

## Within 0-18

### Introduction

The third chapter of *Math Mammoth Grade 2-A* provides lots of practice for learning and memorising the basic addition facts of single-digit numbers where the answer is between 10 and 18.

This chapter includes lots of repetition, drill, and practice. Therefore, you are welcome to mix the lessons from this chapter with some geometry, place value, clock, or measuring, in order to prevent boredom. The goal is to memorise these facts, or at least become so fluent with them that an outsider cannot tell if the student remembers the answer or uses some mental maths strategy to get the answer.

Some students will accomplish this quicker, needing less practice. Some will need more practice. You can also add in some internet-based games (a list of online games is provided on the next page).

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

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

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

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

$9 + 2$  to  $9 + 9$ : 8 facts

$8 + 3$  to  $8 + 8$ : 6 facts

$7 + 4$  to  $7 + 7$ : 4 facts

$6 + 5$  to  $6 + 6$ : 2 facts

After those lessons, we study subtraction. First, the student subtracts to ten. This means subtracting from 14, 15, 16, etc. so that the answer is 10, for example  $16 - \underline{\quad} = 10$ . In the next step, we study subtractions with an answer less than 10, such as  $16 - 7$ . The student practises these by subtracting in two parts: first subtracting to ten, then the rest. For example,  $16 - 7$  becomes  $16 - 6 - 1$ , or  $14 - 6$  becomes  $14 - 4 - 2$ .

The last part of this chapter includes various lessons titled *Number Rainbows* and *Fact Families with ...*, which give lots of practice and reinforcement for the basic addition and subtraction facts. These lessons also include many word problems. They emphasize the connection between addition and subtraction to solve basic subtraction facts such as  $13 - 8$  or  $15 - 6$ . Alongside them, you can also use games or flashcards to reinforce the learning of the facts.

Please see also my videos at [http://www.youtube.com/watch?v=XSVlrkBf\\_Ns](http://www.youtube.com/watch?v=XSVlrkBf_Ns) and <http://www.youtube.com/watch?v=jdIzuGPRhRQ> (Or go to [www.youtube.com/mathmammoth](http://www.youtube.com/mathmammoth) and find the videos about addition and subtraction facts). These two videos explain several strategies for learning addition and subtraction facts, many of which are studied in this chapter.

### The Lessons in Chapter 3

	page	span
Revision: Completing the Next Whole Ten .....	59	2 pages
Revision: Going Over Ten .....	61	2 pages
Adding with 9 .....	63	2 pages
Adding with 8 .....	65	2 pages
Adding with 7 .....	67	2 pages
Adding with 6 .....	69	2 pages
Revision—Facts with 6, 7, and 8 .....	71	2 pages
Subtract to Ten .....	73	2 pages
Difference and How Many More .....	75	3 pages
Number Rainbows—11 and 12 .....	78	2 pages
Fact Families with 11 .....	80	1 page
Fact Families with 12 .....	81	2 pages
Number Rainbows—13 and 14 .....	83	1 page
Fact Families with 13 and 14 .....	84	3 pages
Fact Families with 15 .....	87	2 pages
Fact Families with 16 .....	89	2 pages
Fact Families with 17 and 18 .....	91	3 pages
Mixed Revision, Chapters 1-3 .....	93	2 pages
Revision, Chapter 3 .....	95	3 pages

## Helpful Resources on the Internet

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

**Disclaimer:** These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.

### Video: Strategies for Subtraction Facts

I recommend the usage of FACT FAMILIES in order to learn the basic subtraction facts. That way, when students have a subtraction problem, such as  $7 - 5 = \underline{\quad}$ , they will learn to think through addition and fact families: 5 and 2 and 7 form a fact family, OR that  $5 + 2 = 7$ , so  $7 - 5 = 2$ .

[http://www.youtube.com/watch?v=XSVlrkBf\\_Ns](http://www.youtube.com/watch?v=XSVlrkBf_Ns)

### Video: Strategies for Addition Facts

I list several strategies to learn addition facts for first and second grade maths. I show the pattern of “Sums with 7”, which also is used with other sums, then the 9-trick, the 8-trick, the doubles, doubles plus one more, and how to do random drills using the structure of the addition table.

<http://www.youtube.com/watch?v=jdIzuGPRhRQ>

### Number Jump

Move the ball along the number line to smash the flies.

<http://www.carstensstudios.com/mathdoodles/numberjump.htm>

### Connect Sums

Click on the neighbouring dice-faces/numbers/coins so that the points add up to the given target sum.

<http://www.carstensstudios.com/mathdoodles/connectsums.html>

### Space Jumps

Adding two single-digit numbers, first jump to ten, then the rest to the spaceship. Practises addition that goes over ten.

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

### Bridging Shuttle

Bridging Through Ten means the same as adding to ten first, then the rest. Get a “flight plan”, then first add to ten by typing the number needed in the oval, and press the red button. Then type the rest that the shuttle needs to go in the other oval, and press the red button.

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

### Speedy Sums

Click on numbers that add to the target sum. The more numbers you use, the higher your score will be.

<http://www.schooltimegames.com/Mathematics/AddLikeMad.html>

### Math Magician Games

Flashcard problems in all 4 operations, including subtraction. Answer 20 questions in 1 minute.

<http://www.oswego.org/ocsd-web/games/Mathmagician/mathssub.html>

### Aplus Math Games

Matho (maths and bingo combined), concentration, hidden picture, and Planet Blaster games for the basic operations.

<http://www.aplusmath.com/games/>

### **Addition Surprise**

Draw the answer square in the addition table.

<http://www.hbschool.com/activity/add/add.html>

### **Fun 4 the Brain**

Practise your basic facts with these kid-appealing simple games.

<http://www.fun4thebrain.com/>

### **Power Lines Puzzle**

Arrange the numbers into the pattern so that the numbers on the “lines” add up to the given sum.

<http://www.primarygames.co.uk/pg2/powerlines/powerlines1.html>

### **Online Addition Flashcards**

<http://www.thegreatmartinicompany.com/additionfill.html>

### **Number Bond Machines**

Practise which two numbers add up to a given number. Set the number to be 11, 12, ... 18 to practise basic facts.

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

### **Number Cracker**

Help Mr. Cracker obtain the secret code before the insidious Prof. Soup catches him by guessing what number comes next in a series of numbers.

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

### **Math Carts**

A downloadable racing game for young students to memorise addition and subtraction facts. Students choose various animal themed carts and unlock new carts and race tracks as they progress through the facts. There are three difficulty levels.

**Price: Free**

<http://sandbox.yoyogames.com/games/163070-math-carts>

### **Tux Math**

A versatile arcade game for maths facts with many options. Includes all operations. You need to shoot falling comets that can damage penguins' igloos.

See also my review: [http://www.homeschoolmath.net/reviews/tux\\_math.php](http://www.homeschoolmath.net/reviews/tux_math.php)

**Price: Free**

<http://sourceforge.net/projects/tuxmath>



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## Adding with 8

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

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

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

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

Use the list on the right to practise. Do not write the answers there.  
Just point to the different problems and say the answer aloud.

1. Add. First, circle the ten.

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

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

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

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

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

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

3. Add and fill in what is missing.

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

4. a. Jane ate 8 strawberries, and John ate 5 more than what Jane did.  
How many strawberries did John eat?

b. Angie is 13 years old, and Mike is 5.  
How many years older is Angie than Mike?

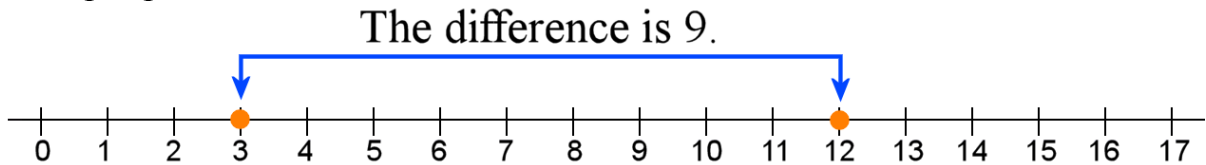
5. Find the patterns and continue them.

<b>a.</b>	<b>b.</b>	<b>c.</b>
$8 + 2 = \underline{\quad}$	$18 + 2 = \underline{\quad}$	$\frac{1}{2}$ of 0 is $\underline{\quad}$ .
$8 + 4 = \underline{\quad}$	$18 + 4 = \underline{\quad}$	$\frac{1}{2}$ of 2 is $\underline{\quad}$ .
$8 + 6 = \underline{\quad}$	$18 + 6 = \underline{\quad}$	$\frac{1}{2}$ of 4 is $\underline{\quad}$ .
$8 + \underline{\quad} = \underline{\quad}$	$18 + \underline{\quad} = \underline{\quad}$	$\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$ .
$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$ .
$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$ .
$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\frac{1}{2}$ of $\underline{\quad}$ is $\underline{\quad}$ .

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## Difference and How Many More

**The difference** or distance between two numbers means how far apart they are from each other on the number line. The difference between 3 and 12 is 9, because they are NINE steps apart.



1. Find the differences between these numbers using the number line above.

- a. difference between 10 and 6: \_\_\_\_\_      b. difference between 12 and 8: \_\_\_\_\_  
 c. difference between 14 and 2: \_\_\_\_\_      d. difference between 17 and 6: \_\_\_\_\_

We can solve the difference between two numbers by **subtracting**.

What is the difference between 10 and 4? Subtract  $10 - 4 = 6$ . The difference is 6.

2. Write a subtraction to find the difference between the numbers.

<b>a.</b> The difference between 10 and 4  _____ - _____ = _____	<b>b.</b> The difference between 2 and 9  _____ - _____ = _____	<b>c.</b> The difference between 8 and 3  _____ - _____ = _____
<b>d.</b> The difference between 20 and 50  _____ - _____ = _____	<b>e.</b> The difference between 10 and 90  _____ - _____ = _____	<b>f.</b> The difference between 19 and 8  _____ - _____ = _____

3. Solve the subtractions by thinking of the distance between the numbers—how far apart they are from each other.

<b>a.</b> $20 - 16 =$ _____	<b>b.</b> $40 - 38 =$ _____	<b>c.</b> $65 - 61 =$ _____	<b>d.</b> $36 - 31 =$ _____
<b>e.</b> $100 - 99 =$ _____	<b>f.</b> $87 - 84 =$ _____	<b>g.</b> $55 - 50 =$ _____	<b>h.</b> $79 - 78 =$ _____

You can also solve the difference between two numbers by thinking of addition: how many more do you need to add to the one number to get the other?

For example, to find the difference between 12 and 7, think:  $7 + \underline{\quad} = 12$ . (“7 and how many more makes 12?”) The answer is 5.

4. Write a “*how many more*” addition to find the difference between the numbers.

a. The difference between 10 and 6 $6 + \underline{\quad} = 10$	b. The difference between 6 and 12 $6 + \underline{\quad} = 12$
c. The difference between 15 and 8 $\underline{\quad} + \underline{\quad} = \underline{\quad}$	d. The difference between 4 and 11 $\underline{\quad} + \underline{\quad} = \underline{\quad}$

5. Subtract. Think how far apart the two numbers are from each other.

a. $15 - 12 = \underline{\quad}$ 12 and <i>how many more</i> makes 15?	b. $11 - 9 = \underline{\quad}$ 9 and <i>how many more</i> makes 11?	c. $16 - 11 = \underline{\quad}$ 11 and <i>how many more</i> makes 16?
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There are two ways to find a difference between two numbers:

**(1) Subtraction**

Find the difference between 100 and 2.  
It is easier to subtract  $100 - 2 = 98$ .  
The difference is 98.

**(2) A “*how many more*” addition**

Find the difference between 100 and 95.  
It is easier to think:  $95 + \underline{\quad} = 100$ .  
The difference is 5.

6. Find the differences.

a. The difference between 60 and 56	b. The difference between 22 and 20
c. The difference between 35 and 1	d. The difference between 67 and 3
e. The difference between 50 and 30	f. The difference between 40 and 100

Whenever a word problem asks “*how many more*,” you can solve it in two ways. You can either subtract, or you can write a “*how many more*” addition. Either way, you are finding the difference between the two numbers.

7. Solve the word problems.

a. Jane is on page 20 and Toby is on page 17 of the same book.  
How many more pages has Jane read?

b. Mum has one dozen eggs plus five in another carton. A dozen means 12.  
How many eggs does Mum have?

c. Becky is reading a 50-page book. She is on page 42.  
How many more pages does she have left to read?

d. Heidi worked in the garden for 2 hours in the morning and 3 hours in the afternoon. Andrew worked for 8 hours in the shop.  
Who worked more hours?  
  
How many more?

e. Tanya has a house full of flies! She killed 28 flies. Her husband killed 5 flies.  
How many more did she kill than him?

f. The next day, Tanya had a house full of flies again. She killed 5 flies in the living room, 12 in the kitchen, and 2 in her room.  
How many flies did she kill in total?

g. Mal had \$12 and Brett had \$6. Then both brothers worked helping Dad in the garden. Mal earned \$5 and Brett earned \$9.  
Now, who has more money?  
  
How much more?

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## Chapter 4: Regrouping in Addition

### Introduction

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

#### Mental maths

Mental maths is important because it builds number sense. We study adding mentally a two-digit number and a single-digit number where the answer goes to the next ten (problems such as  $36 + 8$  or  $45 + 9$ ). These additions use the helping problem composed of the single-digit numbers ( $6 + 8$  or  $5 + 9$ ). The student knows that  $6 + 8$  fills the first ten and is four more than the ten. He/she will learn to use that fact when adding  $36 + 8$ . The sum  $36 + 8$  fills the *next* whole ten (40), and is four more than that, or 44.

#### Regrouping in tens

We also study adding two-digit numbers in columns, and regrouping with tens, or “carrying,” which is illustrated and explained in detail with the help of visual models. These visual models take the place of base-ten blocks or other manipulatives. You are welcome to use actual manipulatives if you prefer. The main concept to understand is that 10 ones make a new ten, and this new ten is regrouped with the other tens, written using a little “1” in the tens column.

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

The lessons also include lots of word problems, and occasional revision problems about doubling and even and odd numbers.

#### The Lessons

	page	span
Going Over to the Next Ten .....	101	3 pages
Add with Two-Digit Numbers Ending in 9 .....	104	2 pages
Add a Two-Digit Number and a Single-Digit Number Mentally.....	106	2 pages
Regrouping with Tens .....	108	3 pages
Add in Columns Practice .....	111	3 pages
Mental Addition of Two-Digit Numbers .....	114	3 pages
Adding Three or Four Numbers Mentally .....	117	2 pages
Adding Three or Four Numbers in Columns.....	119	4 pages
Mixed Revision, Chapters 1 - 4 .....	123	2 pages
Revision, Chapter 4 .....	125	2 pages

# Helpful Resources on the Internet

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

**Disclaimer:** These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.

## 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 10s, or ten 100s to regroup them. Choose “Columns = 2” to restrict the work to two-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)

## Callum's Addition Pyramid

Add the pairs of numbers to get a number on the next level and finally the top number. Three difficulty levels.

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

## Techno Tortoise

Practise adding 2 two-digit numbers into parts on a number line.

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

## Mr. Martini's Classroom: Addition and Subtraction Inequalities

Compare expressions that involve addition and subtraction of one and two-digit numbers.

<http://www.thegreatmartinicompany.com/inequalities/number-comparison.html>

and

<http://www.thegreatmartinicompany.com/inequalities/add-subtract-comparison.html>

## Mr. Martini's Classroom: Long Addition

Practise adding two-digit numbers in columns online.

<http://www.thegreatmartinicompany.com/longarithmetic/longaddition.html>

## Mathionare Addition Quiz

Answer increasingly more difficult addition questions (one and two-digit numbers), and win a million!

<http://www.mathsisfun.com/games/mathionaire-addition-quiz.html>

## Button Beach Challenge

Figure out what number the various coloured buttons represent.

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

## Teaching Treasures - Year 2 Math Worksheets

Simple online addition and subtraction worksheets where the student types in the answer and can check it. [http://www.teachingtreasures.com.au/maths/maths\\_level2.html](http://www.teachingtreasures.com.au/maths/maths_level2.html)

## Double Digit Addition

Match the addition problem with the correct sum. Enjoy!

<http://www.quia.com/mc/818288.html>

**Addition Level 2**

A matching game where you add a one-digit number and a two-digit number.

<http://www.quia.com/mc/65798.html>

**Speed Grid Addition**

Find numbers on the grid that add up to the given number. This uses both single-digit and two-digit numbers.

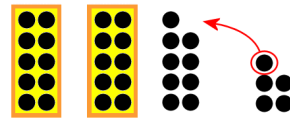
<http://www.oswego.org/ocsd-web/games/SpeedGrid/Addition/urikares.html>

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## Add with Two-Digit Numbers Ending in 9

Imagine that 29 wants to be 30...  
so it “grabs” one from 5.  
Then, 29 becomes 30, and 5 becomes 4.

The addition problem is changed to  $30 + 4 = 34$ .



$$29 + 5 = \underline{\quad}$$

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

 a. $19 + 5 = \underline{\quad}$	 b. $29 + 7 = \underline{\quad}$	 c. $49 + 5 = \underline{\quad}$
 d. $29 + 8 = \underline{\quad}$	 e. $39 + 6 = \underline{\quad}$	 f. $49 + 9 = \underline{\quad}$





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

a. $19 + 7 = \underline{\quad}$  $\underline{9} + \underline{7} = \underline{\quad}$	b. $49 + 3 = \underline{\quad}$  $\underline{\quad} + \underline{\quad} = \underline{\quad}$	c. $39 + 4 = \underline{\quad}$  $\underline{\quad} + \underline{\quad} = \underline{\quad}$
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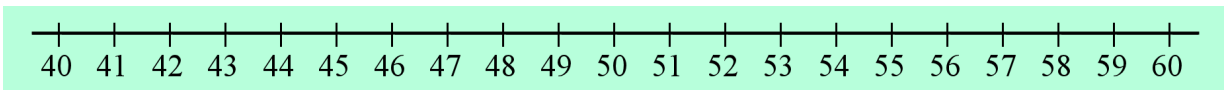
3. Add. Compare the problems.

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

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

 <b>a.</b>	 <b>b.</b>	 <b>c.</b>	 <b>d.</b>
$9 + \underline{\quad} = 14$	$4 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 15$	$7 + 8 = \underline{\quad}$
$9 + \underline{\quad} = 15$	$8 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 17$	$8 + 8 = \underline{\quad}$
$9 + \underline{\quad} = 13$	$2 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 12$	$5 + 8 = \underline{\quad}$
$9 + \underline{\quad} = 18$	$5 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 14$	$6 + 8 = \underline{\quad}$
$9 + \underline{\quad} = 12$	$6 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 13$	$3 + 8 = \underline{\quad}$
$9 + \underline{\quad} = 17$	$9 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 18$	$9 + 8 = \underline{\quad}$
$9 + \underline{\quad} = 16$	$7 + 9 = \underline{\quad}$	$8 + \underline{\quad} = 16$	$4 + 8 = \underline{\quad}$

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



<p>a. Difference between 41 and 53: <u>          </u></p> <p>b. Difference between 60 and 46: <u>          </u></p>	<p>c. Difference between 59 and 48: <u>          </u></p>
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6. Find the patterns and continue them!

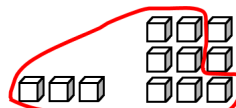
<p><b>a.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> </div> <p style="text-align: center;">0      1      3      6      10      <u>      </u>      <u>      </u>      <u>      </u>      <u>      </u></p>	<p><b>b.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> <div style="text-align: center;">+ <span style="border: 1px solid black; padding: 2px 5px;">  </span> ↪</div> </div> <p style="text-align: center;"><u>      </u>      <u>      </u>      <u>      </u>      <u>      </u>      <u>      </u>      44      48      52      56</p>
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## Regrouping with Tens

When adding  $3 + 9$ , we can circle ten little ones to form a ten. We write “1” in the tens column.

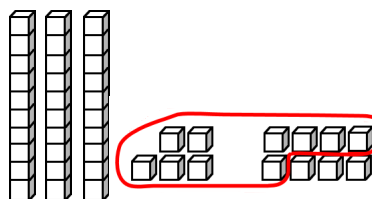
There are two little ones left over, so we write “2” in the ones column.



	tens	ones
		3
+		9
	1	2

With  $35 + 8$ , we circle ten little ones to make a ten. There already are three tens, so in total we now have four tens. So, we write “4” in the tens column.

There are three little cubes left over, so we write “3” in the ones column.



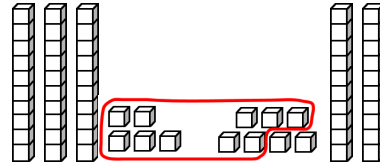
	tens	ones
	3	5
+		8
	4	3

1. **Circle** ten cubes to make a **new ten**. Count the tens, including the new one. Count the ones. Write the tens and ones in their own columns. You can also use manipulatives.

<p><b>a.</b></p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 5px;"></th> <th style="padding: 5px; text-align: center;">tens</th> <th style="padding: 5px; text-align: center;">ones</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px; text-align: center;">3</td> <td style="border: 1px solid black; width: 40px; height: 30px; text-align: center;">3</td> </tr> <tr> <td style="padding: 5px; text-align: right;">+</td> <td style="border: 1px solid black; width: 40px; height: 30px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px; text-align: center;">9</td> </tr> <tr> <td style="padding: 5px;"></td> <td colspan="2" style="border-top: 1px solid black;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px;"></td> </tr> </tbody> </table>		tens	ones		3	3	+		9							<p><b>b.</b></p> <table style="margin-left: auto; margin-right: auto;"> <thead> <tr> <th style="padding: 5px;"></th> <th style="padding: 5px; text-align: center;">tens</th> <th style="padding: 5px; text-align: center;">ones</th> </tr> </thead> <tbody> <tr> <td style="padding: 5px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px; text-align: center;">2</td> <td style="border: 1px solid black; width: 40px; height: 30px; text-align: center;">5</td> </tr> <tr> <td style="padding: 5px; text-align: right;">+</td> <td style="border: 1px solid black; width: 40px; height: 30px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px; text-align: center;">8</td> </tr> <tr> <td style="padding: 5px;"></td> <td colspan="2" style="border-top: 1px solid black;"></td> </tr> <tr> <td style="padding: 5px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px;"></td> <td style="border: 1px solid black; width: 40px; height: 30px;"></td> </tr> </tbody> </table>		tens	ones		2	5	+		8						
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+	1	8																													
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	2	5																													
+	2	7																													



When we make a new ten from the ones, we are **regrouping**. The ten ones get grouped as a ten, and are counted with the other tens.



	tens	ones
	1	
+	3	5
	2	7
	6	2

This is also called **carrying to tens**.

Imagine someone “gathering” ten little cubes in his lap and “carrying” them over into the tens column as 1 ten.

To show this new ten, write a little “1” in the tens column above the other numbers. Then add in the tens-column as usual, adding the little “1” also.

2. Circle ten ones to make a new ten. Add the tens and ones in columns.

<p>a.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ 1 \quad 3 \\ + 2 \quad 9 \\ \hline \end{array}</math></p>	<p>b.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ 2 \quad 4 \\ + 3 \quad 8 \\ \hline \end{array}</math></p>
<p>c.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ 3 \quad 5 \\ + 1 \quad 9 \\ \hline \end{array}</math></p>	<p>d.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ 2 \quad 4 \\ + 4 \quad 7 \\ \hline \end{array}</math></p>
<p>e.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ \phantom{0} \quad \phantom{0} \\ + \phantom{0} \quad \phantom{0} \\ \hline \end{array}</math></p>	<p>f.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ \phantom{0} \quad \phantom{0} \\ + \phantom{0} \quad \phantom{0} \\ \hline \end{array}</math></p>
<p>g.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ \phantom{0} \quad \phantom{0} \\ + \phantom{0} \quad \phantom{0} \\ \hline \end{array}</math></p>	<p>h.  <math>\begin{array}{r} \text{tens} \quad \text{ones} \\ \phantom{0} \quad \phantom{0} \\ + \phantom{0} \quad \phantom{0} \\ \hline \end{array}</math></p>

3. Add. If you can make a new ten from the ones, regroup.

a. 
$$\begin{array}{r} 42 \\ + 15 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 27 \\ + 45 \\ \hline \end{array}$$

c. 
$$\begin{array}{r} 65 \\ + 26 \\ \hline \end{array}$$

d. 
$$\begin{array}{r} 83 \\ + 15 \\ \hline \end{array}$$

e. 
$$\begin{array}{r} 34 \\ + 19 \\ \hline \end{array}$$

f. 
$$\begin{array}{r} 52 \\ + 41 \\ \hline \end{array}$$

g. 
$$\begin{array}{r} 13 \\ + 44 \\ \hline \end{array}$$

h. 
$$\begin{array}{r} 63 \\ + 27 \\ \hline \end{array}$$

i. 
$$\begin{array}{r} 36 \\ + 51 \\ \hline \end{array}$$

j. 
$$\begin{array}{r} 66 \\ + 29 \\ \hline \end{array}$$

We can add three numbers by writing them under each other. This is not any more difficult than adding two numbers.

On the right, first add the ones.  $2 + 7 + 5 = 14$ . You get a new ten. So, regroup and write that new ten with the other tens.

In the tens, add  $1 + 3 + 2 + 1 = 7$ .

	1	
	3	2
	2	7
+	1	5
	7	4

4. Add. Regroup the ones to make a new ten.

a. 
$$\begin{array}{r} 34 \\ 19 \\ + 26 \\ \hline \end{array}$$

b. 
$$\begin{array}{r} 15 \\ 27 \\ + 45 \\ \hline \end{array}$$

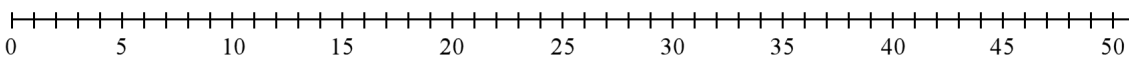
c. 
$$\begin{array}{r} 13 \\ 27 \\ + 26 \\ \hline \end{array}$$

d. 
$$\begin{array}{r} 26 \\ 42 \\ + 19 \\ \hline \end{array}$$

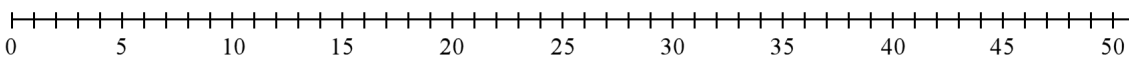
e. 
$$\begin{array}{r} 34 \\ 21 \\ + 19 \\ \hline \end{array}$$

5. Show the additions on the number line by drawing lines that are that long.

a.  $13 + 9 + 11 = \underline{\hspace{2cm}}$



b.  $27 + 16 = \underline{\hspace{2cm}}$



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## Adding Three or Four Numbers Mentally

<p>When you add three numbers, you can add them in any order you wish.</p>	<p>Perhaps add 8 and 8 first:</p> $8 + 8 + 6$ $= 16 + 6 = \underline{\quad}$	<p>Or perhaps add 8 and 6 first:</p> $8 + 8 + 6$ $= 8 + 14 = \underline{\quad}$
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1. Add three numbers.

a. $8 + 8 + 8 = \underline{\quad}$	b. $7 + 9 + 6 = \underline{\quad}$	c. $5 + 8 + 9 = \underline{\quad}$
d. $7 + 9 + 5 = \underline{\quad}$	e. $8 + 6 + 4 = \underline{\quad}$	f. $2 + 9 + 5 = \underline{\quad}$

When you add four numbers, often it is easier to add them <i>in pairs</i> : two numbers at a time.		Occasionally, some other way of adding is easier.
<p>Add 7 and 3. Add 5 and 6:</p> $7 + 5 + 3 + 6$ $= 10 + 11 = \underline{\quad}$	<p>Add the first two, and the last two:</p> $6 + 9 + 8 + 5$ $= 15 + 13 = \underline{\quad}$	<p>Double 8 makes 16, then to that add 4:</p> $9 + 8 + 8 + 4$ $= 16 + 4 + 9 = \underline{\quad}$

2. Add four numbers. Look at the example.

<p>a. <math>8 + 8 + 2 + 8</math></p> $= 16 + 10$ $= 26$	<p>b. <math>7 + 5 + 5 + 6</math></p> $= \underline{\quad} + \underline{\quad}$ $= \underline{\quad}$	<p>c. <math>4 + 7 + 2 + 5</math></p> $= \underline{\quad} + \underline{\quad}$ $= \underline{\quad}$
<p>d. <math>6 + 7 + 9 + 8</math></p> $= \underline{\quad} + \underline{\quad}$ $= \underline{\quad}$	<p>e. <math>8 + 5 + 2 + 6</math></p> $= \underline{\quad} + \underline{\quad}$ $= \underline{\quad}$	<p>f. <math>4 + 5 + 3 + 9</math></p> $= \underline{\quad} + \underline{\quad}$ $= \underline{\quad}$

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# Chapter 5: Geometry and Fractions

## Introduction

The fifth chapter of *Math Mammoth Grade 2-A* covers geometry topics and an introduction to fractions.

In geometry, the emphasis is on exploring shapes. Students are supposed to recognize and draw basic shapes, and identify triangles, rectangles, squares, quadrilaterals, pentagons, hexagons, and cubes. Drawing is done by first drawing dots on paper, then connecting those with a ruler.

We also study some geometric patterns, have surprises with pentagons and hexagons, and make shapes in a tangram-like game. These topics are to provide some fun while also letting students explore geometry and helping them to memorise the terminology for basic shapes.

In the section on fractions, the student divides some basic shapes into halves, thirds, and fourths (quarters). They also learn the common notation for fractions (such as  $\frac{1}{3}$ ) and colour parts to show a given fraction. We also study comparing fractions using visual models.

### The Lessons

	page	span
Shapes Revision .....	130	<i>3 pages</i>
Surprises with Shapes .....	133	<i>2 pages</i>
Rectangles and Squares .....	135	<i>3 pages</i>
Making Shapes .....	138	<i>1 page</i>
Geometric Patterns .....	141	<i>2 pages</i>
Solids .....	143	<i>2 pages</i>
Printable Shapes .....	145	<i>4 pages</i>
Some Fractions.....	153	<i>3 pages</i>
Comparing Fractions .....	156	<i>2 pages</i>
Mixed Revision, Chapters 1 - 5 .....	158	<i>2 pages</i>
Revision, Chapter 5 .....	160	<i>2 pages</i>

## Helpful Resources on the Internet

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

**Disclaimer:** These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.

### Free Worksheets for Area and Perimeter

Create worksheets for the area and the perimeter of rectangles/squares with images, word problems, or problems where the student writes an expression for the area using the distributive property. Options also include area and perimeter problems for irregular rectangular areas, and more.

[http://www.homeschoolmath.net/worksheets/area\\_perimeter\\_rectangles.php](http://www.homeschoolmath.net/worksheets/area_perimeter_rectangles.php)

### Buzzing with Shapes

Tic tac toe with shapes; drag the counter to the shape that has that amount of sides.

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

### Shape Cutter

Draw any shape (polygon), cut it, and manipulate the cut pieces. You can have the computer mix them up, and then try to recreate the original shape.

<http://illuminations.nctm.org/ActivityDetail.aspx?ID=72>

### Shifting Shapes

Figure out what shape it is when viewing through a small opening! Click on the “eye” button to see it in its entirety.

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

### Polygon Matching Game

[http://www.mathplayground.com/matching\\_shapes.html](http://www.mathplayground.com/matching_shapes.html)

### Polygon Playground

Drag various colourful polygons to the work area to make your own creations!

<http://mathcats.com/explore/polygons.html>

### Shapes Identification Quiz from ThatQuiz.org

An online quiz in a multiple-choice format, asking to identify common two-dimensional shapes. You can modify the quiz parameters to your liking.

<http://www.thatquiz.org/tq-f/math/shapes/>

### Tangram puzzles for kids

Use the seven pieces of the Tangram to form the given puzzle.

Complete the puzzle by moving and rotating the seven shapes.

<http://www.abcya.com/tangrams.htm>

### Logic Tangram game

Note: this uses four pieces only. Use logic and spatial reasoning skills to assemble the four pieces into the given shape.

<http://www.mathplayground.com/tangrams.html>

### **Interactive Tangram Puzzle**

Place the tangram pieces so they form the given shape.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_112\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_112_g_2_t_1.html)

### **Online Kaleidoscope**

Create your own kaleidoscope creation with this interactive tool.

[http://www.zefrank.com/dtoy\\_vs\\_byokal/](http://www.zefrank.com/dtoy_vs_byokal/)

### **Fractions - Part of a Whole**

Divide the pie into pieces and colour some. The computer shows the fraction.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_102\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_102_g_2_t_1.html)

### **Visualizing Fractions**

The other way around as in the previous activity: the computer shows a fraction, and you divide the pie and colour the pieces.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_103\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_103_g_2_t_1.html)

### **Naming Fractions**

An interactive activity that asks the student to name the fraction shown.

[http://nlvm.usu.edu/en/nav/frames\\_asid\\_104\\_g\\_2\\_t\\_1.html](http://nlvm.usu.edu/en/nav/frames_asid_104_g_2_t_1.html)

### **Who Wants Pizza?**

Lessons and interactive exercises about fractions, based on the pizza model.

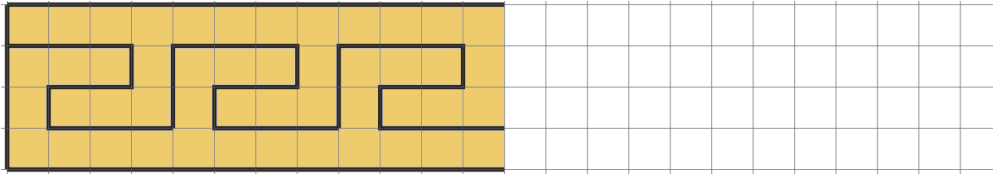
<http://math.rice.edu/~lanius/fractions/frac.html>



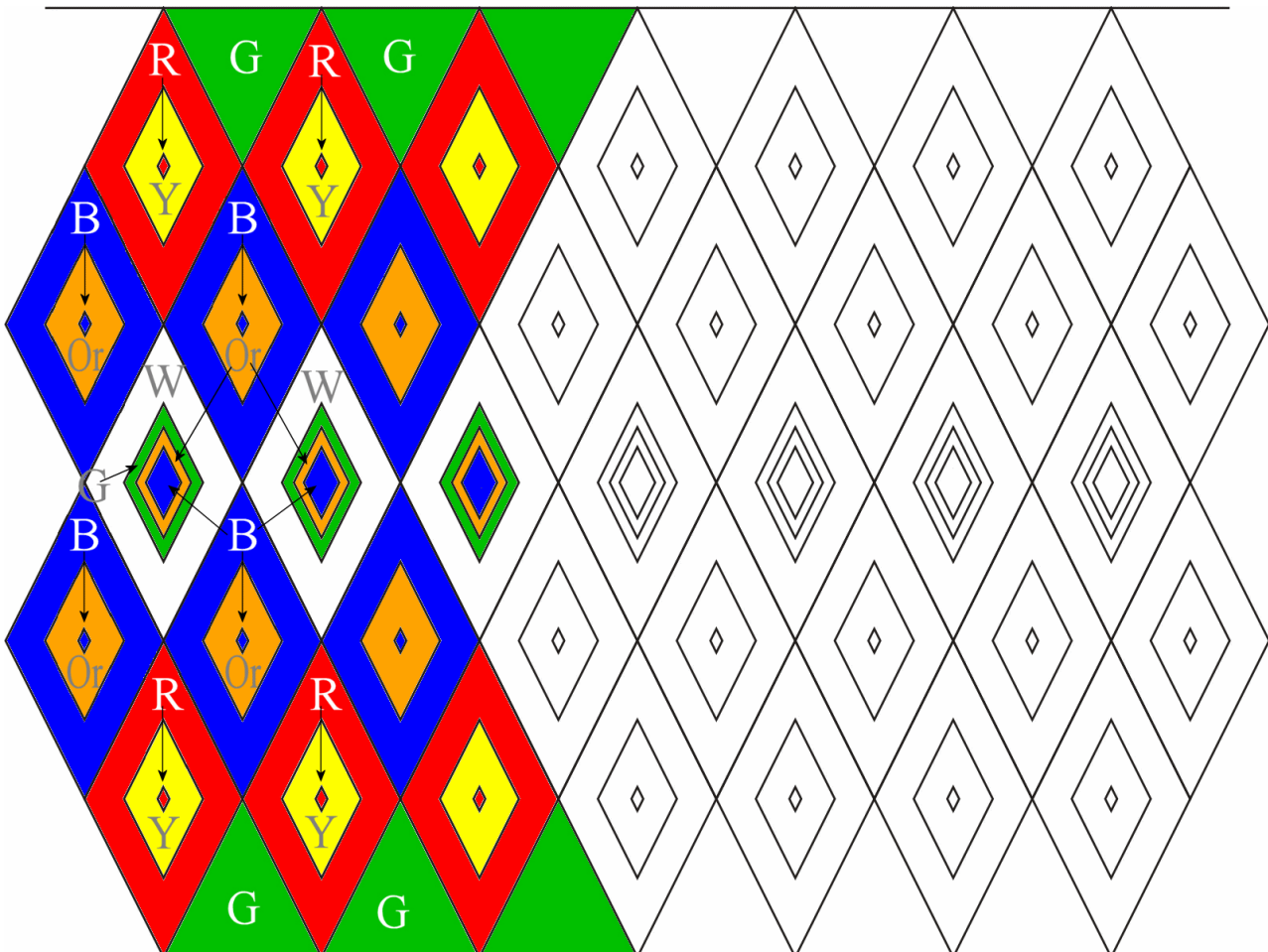
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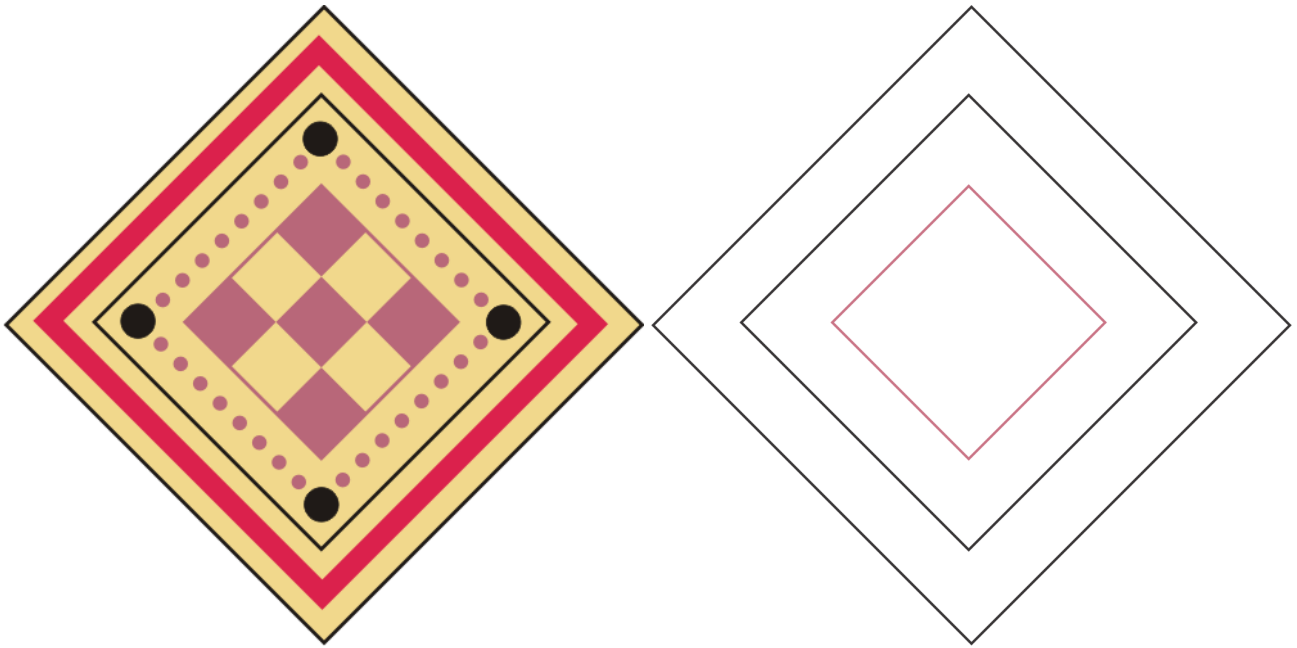
## Geometric Patterns

1. The design below is often seen on Greek vases. Continue it.



2. This is a pattern from an apron used by Kirdi people in Cameroon, Africa. Notice it uses PARALLELOGRAMS that are inside each other. Continue the colouring in the pattern. (G = green, R = red, B = blue, W = white, Or = orange, Y = yellow)



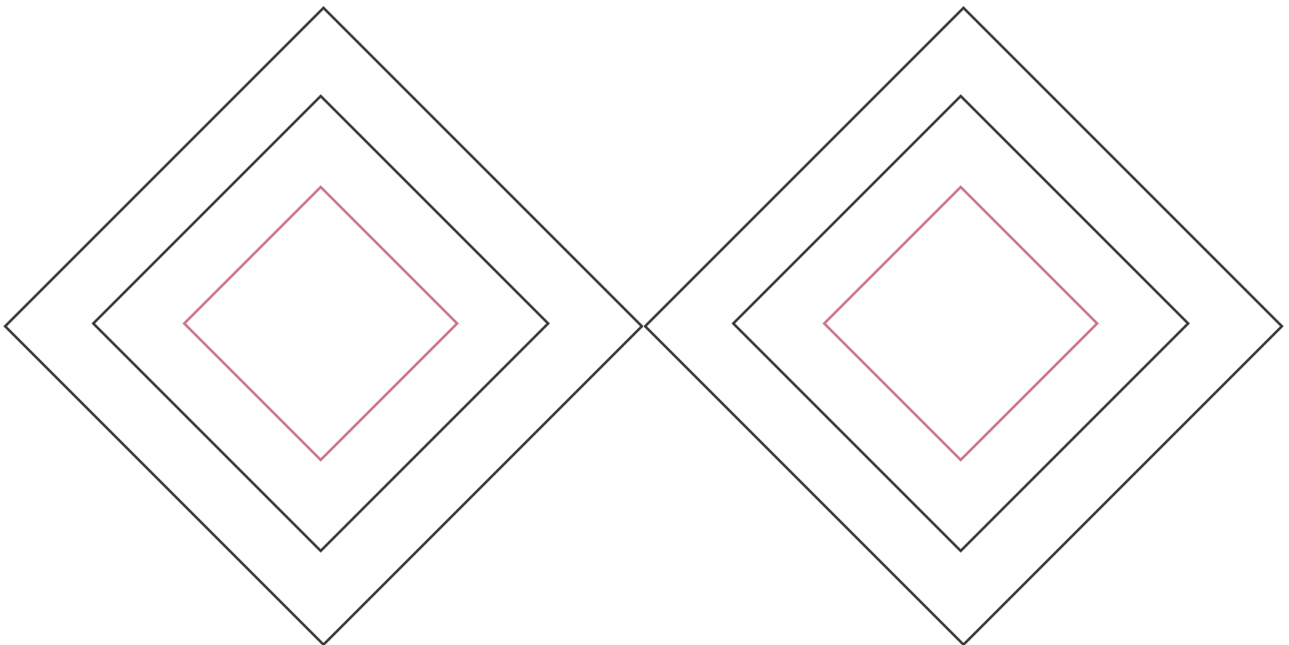


3. This is a geometric design found on a Greek vase.

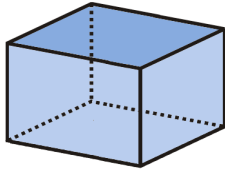
a. What two shapes are used in this design?

\_\_\_\_\_ and \_\_\_\_\_

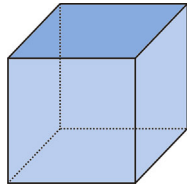
b. Copy the design at least once in the empty shapes.



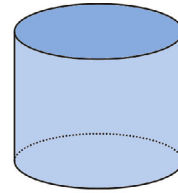
## Solids



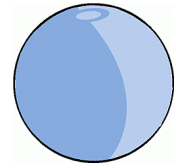
This is a **box**. It is also called a “rectangular prism.”



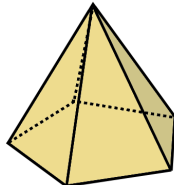
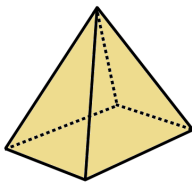
A **cube** is a box, too, but all of its sides are equal in length.



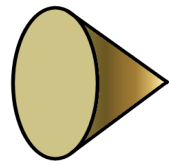
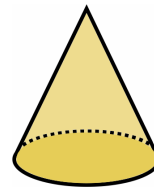
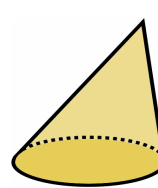
A **cylinder** has a circle at the top and the bottom.



This is a **sphere**, or just a ball.



A **pyramid** has a pointed top. Its bottom shape can be any many-sided figure, such as a triangle, a rectangle, a square, or a pentagon.



A **cone** has a pointed top, as well, but it has a rounded shape on the bottom.

1. Make a cube, a cylinder, a cone, and a pyramid using the cut-outs on the following pages. Your teacher will help you.

2. A *face* is any of the flat sides of a solid.

a. Count how many faces a cube has. \_\_\_\_\_ faces

What shapes are they?

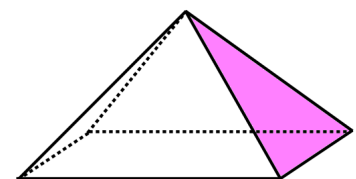
b. Count how many faces a box has. \_\_\_\_\_ faces

What shapes are they?

c. Count how many faces this pyramid has. \_\_\_\_\_ faces

What shapes are they?

d. Count how many faces a ball has. \_\_\_\_\_ faces



How about the cylinder? It has three faces: the top and bottom circles are two faces, and the third face is “wrapped around” it. And the cone? It has two faces.

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math

# MAMMOTH

## Grade 2-B Worktext International Version

**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 International Version Grade 2-A* and *Grade 2-B* worktexts comprise a complete maths curriculum for the second grade mathematics studies.

This curriculum is essentially the same as the version of Math Mammoth Grade 2 sold in the United States (US version), only customised for international use. The US version is aligned to the “Common Core” Standards, so it may not be properly aligned to the second grade standards in your country. However, you can probably find material for any missing topics in neighbouring grades. For example, let’s say multiplication tables are studied in grade or year 4 in your country. They are not found in Math Mammoth Grade 4. Instead, you will need to use Math Mammoth Grade 3-A to study them.

The International version of Math Mammoth differs from the US version in these aspects:

- The currency used in the money chapters in grades 1-3 is the Australian dollar. (The download version of this curriculum for grades 1-3 include the chapter on money for European, South African, Canadian, US, and British currencies.)
- The curriculum teaches the metric measurement units. Imperial units, such as inches and pounds, are not used.
- The spelling conforms to British international standards.
- Paper size is A4.

The four main areas of study for second grade are:

1. Understanding of the base-ten system within 1 000. This includes place value with three-digit numbers, skip-counting in fives, tens, and multiples of hundreds, tens, and ones (within 1 000). (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 metric 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. 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. For the chapter on measuring, the child should be familiar with three-digit numbers.

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 spiralling 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 revision problems from past topics.

This does not mean that your child would not need occasional revision. 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 time for revision 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 revision, 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 reprint some already studied pages. Also, chapter 3, which practises addition and subtraction facts within 18, contains a lot of pages with problems, so you can choose to “save” some of them for later revision.

*I wish you success in teaching maths!*

*Maria Miller, the author*

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# Chapter 6: Three-Digit Numbers

## Introduction

The sixth chapter of *Math Mammoth Grade 2-B* 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 student practises 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 also by twos and fives. Then we compare and order three-digit numbers.

After this, the lessons change to mental maths. First, we study *Adding and Subtracting Whole Hundreds* mentally. Students practise 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 working with 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 Revision .....	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 Revision, Chapters 1 - 6 .....	49	2 pages
Revision, Chapter 6 .....	51	3 pages

# Helpful Resources on the Internet

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

**Disclaimer:** These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.

## 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 maths 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. Practises counting by 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, practise, and play with 3-digit numbers.

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


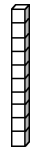
## Thatquiz.org Quiz for Graphs

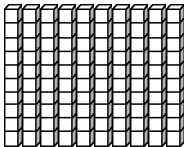
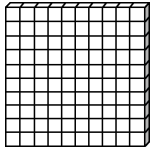
A 10-question quiz involving bar graphs and pictographs.

<http://www.thatquiz.org/tq-5/?-j40v0h-11-p0>

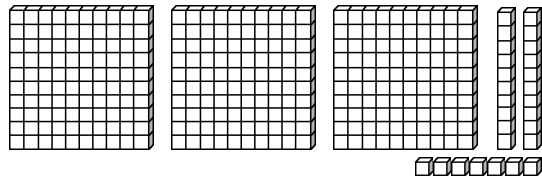
# Three-Digit Numbers

Ten ones make a ten: Ten ten-pillars make ONE HUNDRED:

 =   
 10 ones = 10

 =   
 10 tens = 100

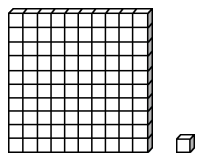
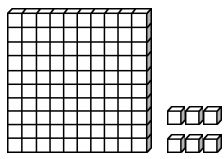
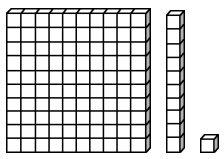
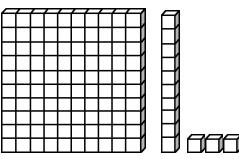
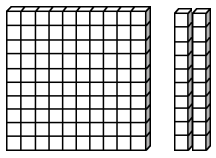
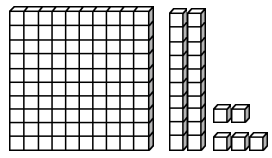
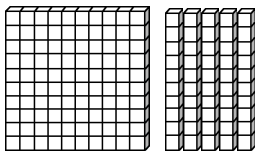
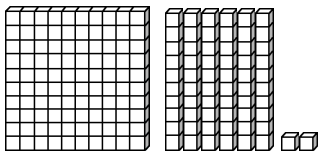
Write hundreds, tens, and ones in their own columns:

 =
 

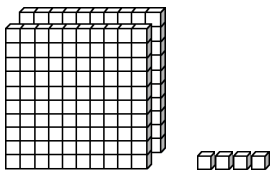
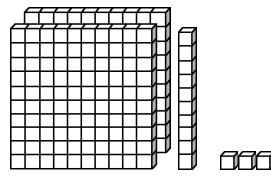
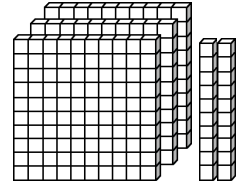
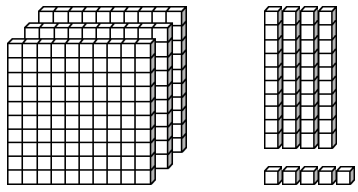
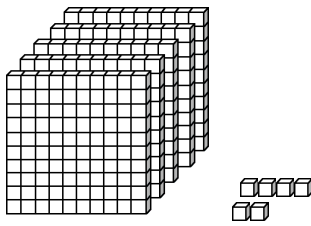
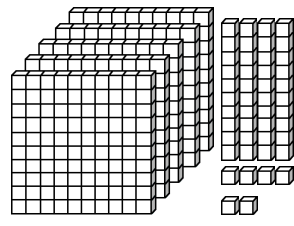
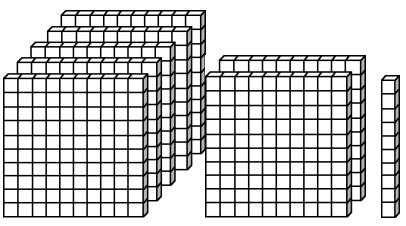
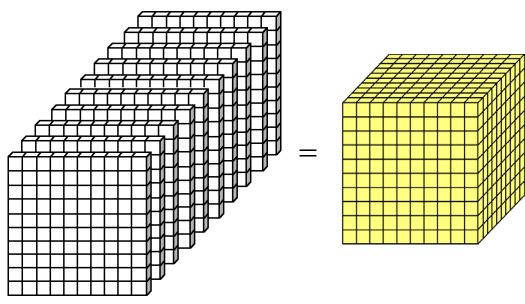
hund- reds	tens	ones
3	2	7

three hundred and twenty-seven

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

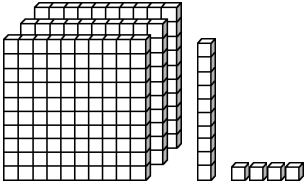
<p><b>a.</b> one hundred and one</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">1</td> <td style="width: 33%;">0</td> <td style="width: 33%;">1</td> </tr> </table>	1	0	1	<p><b>b.</b> one hundred and six</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<p><b>c.</b> one hundred and eleven</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">1</td> <td style="width: 33%;">1</td> <td style="width: 33%;">1</td> </tr> </table>	1	1	1	<p><b>d.</b> one hundred and thirteen</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>			
1	0	1													
1	1	1													
<p><b>e.</b> one hundred and twenty</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<p><b>f.</b> one hundred and twenty-five</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<p><b>g.</b> one hundred and fifty</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>				<p><b>h.</b> one hundred and sixty-two</p>  <p>hundreds   tens   ones</p> <table border="1" style="width: 100%; height: 30px;"> <tr> <td style="width: 33%;"></td> <td style="width: 33%;"></td> <td style="width: 33%;"></td> </tr> </table>			

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

<p>a. <u>two hundred</u></p> <p style="text-align: center;"><u>and four</u></p>  <p>hundreds    tens    ones</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%;">2</td> <td style="width: 33%;">0</td> <td style="width: 33%;">4</td> </tr> </table>	2	0	4	<p>b. <u>two hundred</u></p> <p style="text-align: center;"><u>and thirteen</u></p>  <p>hundreds    tens    ones</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"> </td> <td style="width: 33%;"> </td> <td style="width: 33%;"> </td> </tr> </table>				<p>c. _____</p> <p>_____</p>  <p>hundreds    tens    ones</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"> </td> <td style="width: 33%;"> </td> <td style="width: 33%;"> </td> </tr> </table>			
2	0	4									
<p>d. _____</p> <p>_____</p>  <p style="text-align: center;">H      T      O</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"> </td> <td style="width: 33%;"> </td> <td style="width: 33%;"> </td> </tr> </table>				<p>e. _____</p> <p>_____</p>  <p style="text-align: center;">H      T      O</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"> </td> <td style="width: 33%;"> </td> <td style="width: 33%;"> </td> </tr> </table>				<p>f. _____</p> <p>_____</p>  <p style="text-align: center;">H      T      O</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"> </td> <td style="width: 33%;"> </td> <td style="width: 33%;"> </td> </tr> </table>			
<p>g. _____</p>  <p style="text-align: center;">H      T      O</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 33%; height: 30px;"> </td> <td style="width: 33%;"> </td> <td style="width: 33%;"> </td> </tr> </table>				<p>h. <u>Ten hundreds = One thousand</u></p>  <p style="text-align: center;">Th    H    T    O</p> <table border="1" style="width: 100%; text-align: center;"> <tr> <td style="width: 25%;">1</td> <td style="width: 25%;">0</td> <td style="width: 25%;">0</td> <td style="width: 25%;">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.

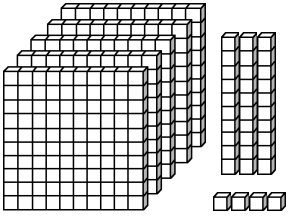


\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

b.

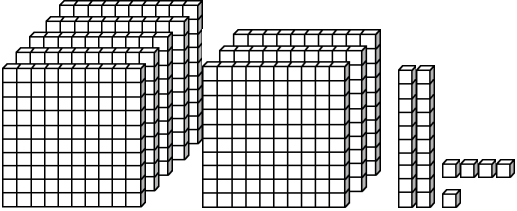


\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

c.

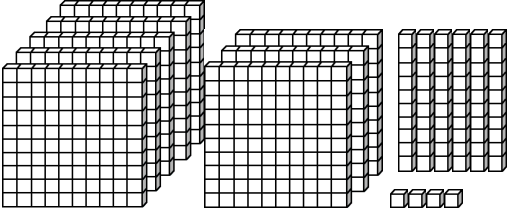


\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

d.



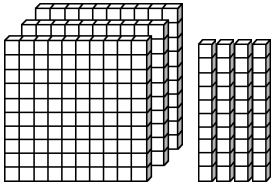
\_\_\_\_\_ + \_\_\_\_\_ + \_\_\_\_\_

H      T      O

--	--	--

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

e.



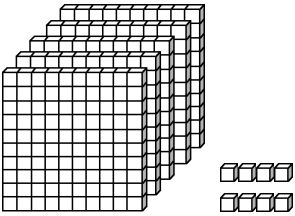
\_\_\_\_\_ + \_\_\_\_\_ + 0

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 and five	five hundred and fifty	one hundred and eighteen			
$500 + 8$	$500 + 5$	$800 + 10 + 8$			

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

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

How many tens are in a thousand?

**Puzzle Corner**



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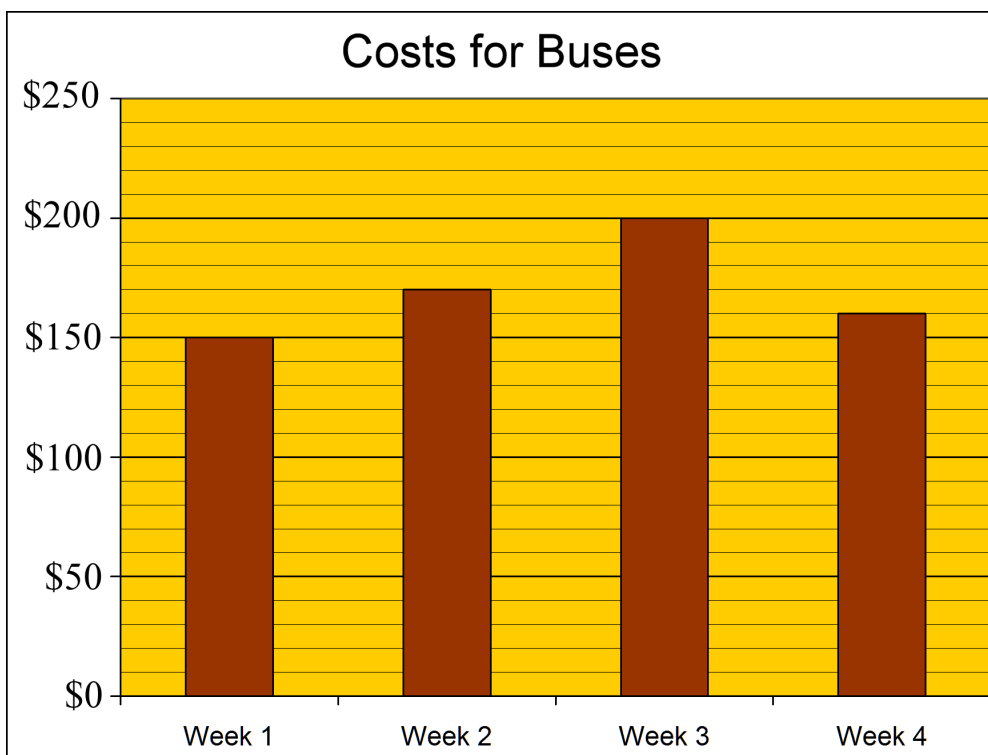
## Patterns and Problems

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

Then, Daniel got 100 more points and Brian got 30 more points (Jerry got none). Add those to their point counts and write the new point counts in the grid. Who won the game?

Jerry	Daniel	Brian
540	270	330

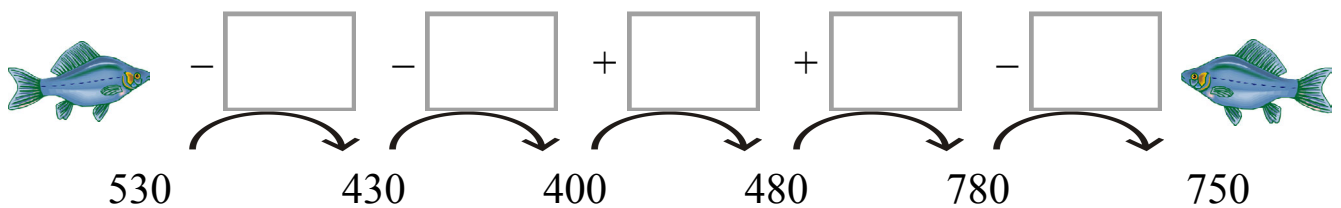
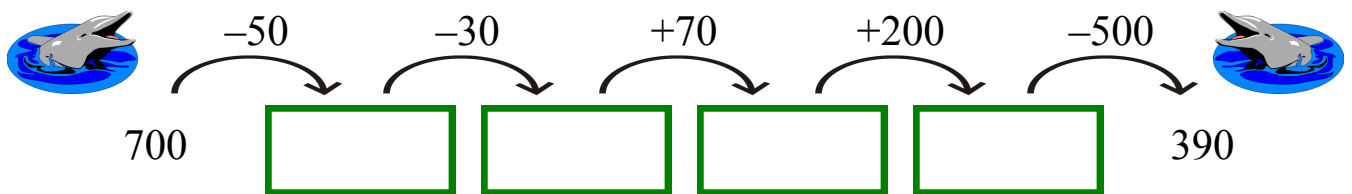
2. The bar graph shows how much money the Smith family spent for riding buses in four different weeks.
- Mark above each bar how much they spent for buses in dollars.
  - How much more did they pay for week 3 than for week 4?
  - How much more did they pay for week 2 than for week 1?



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

520	540	560		
620				
820				
				1 000

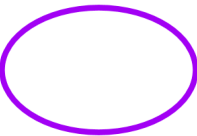

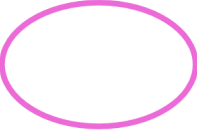
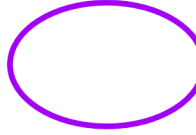
4. Fill in.

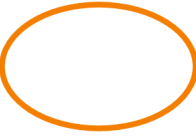
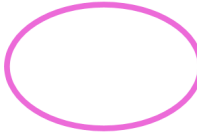
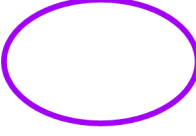



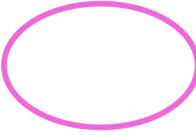
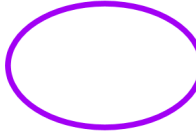


5. Continue the patterns!

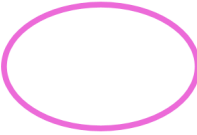
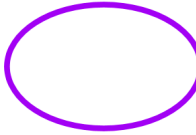

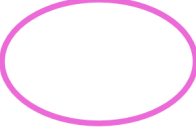
a.	b.
590 - 60 = _____	770 + 10 = _____
590 - 70 = _____	770 + 20 = _____
590 - 80 = _____	770 + 30 = _____
590 - _____ = _____	770 + _____ = _____
590 - _____ = _____	770 + _____ = _____
590 - _____ = _____	770 + _____ = _____

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	

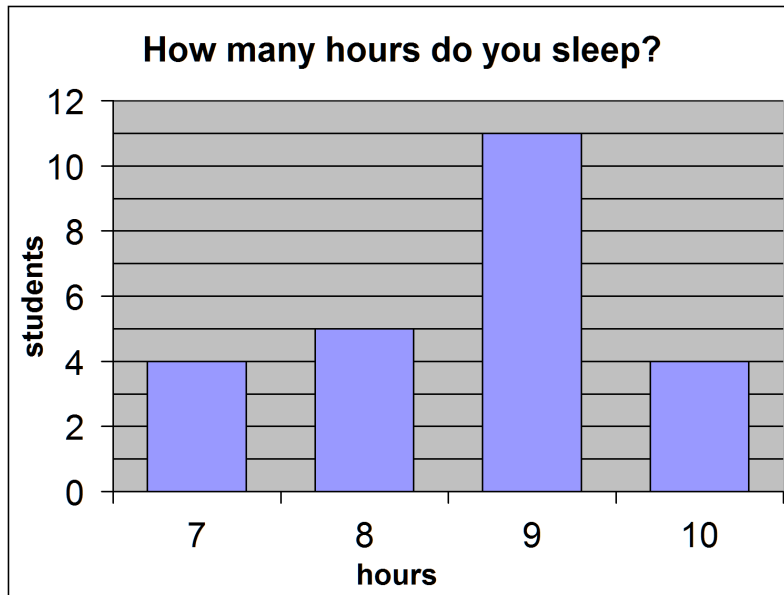
What was subtracted is missing:	i. 1 000 -  = 700	j. 740 -  = 40
	k. 667 -  = 607	l. 999 -  = 299

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 slept *less than* 8 hours last night?
- How many students 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-B* covers measuring length and weight. The student measures and estimates length in centimetres, and learns to measure to the nearest centimetre. The bigger units—metres, and kilometres—are introduced, but in this grade level the students do not yet study conversions between the units.

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

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 kilograms, and have an idea of how many 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 students with measuring units. In third grade, the study of measuring turns toward conversions between the different units. We will study volume in later grades.

### The Lessons

	page	span
Measuring to the Nearest Centimetre .....	56	3 pages
Some More Measuring .....	59	3 pages
Metres and Kilometres .....	62	2 pages
Weight in Kilograms .....	64	2 pages
Mixed Revision, Chapters 1 - 7 .....	66	3 pages
Revision, Chapter 7 .....	69	1 page

## Helpful Resources on the Internet

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

**Disclaimer:** *These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

### Scales Reader

Practise 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/>



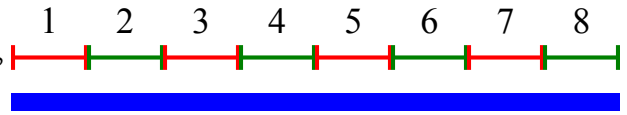
# Measuring to the Nearest Centimetre

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





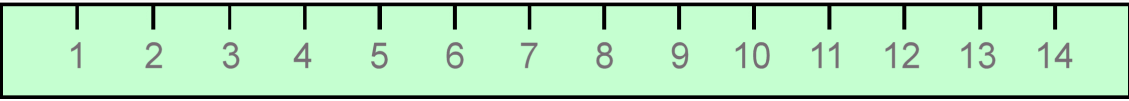

This line is 1 centimetre long: 

A centimetre is written in short form as "cm."

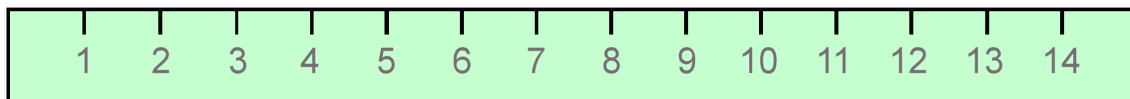
The blue line on the right is 8 cm long. →



1. How many centimetres long are these lines?

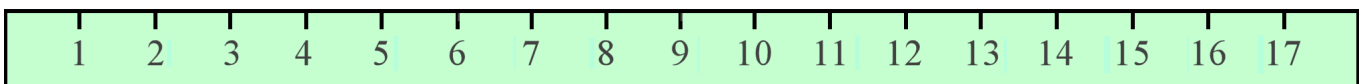
<p>a.  _____ cm</p> <p></p>	<p>b.  _____ cm</p> <p></p>
<p>c. _____ cm</p> 	
<p>d.  _____ cm</p>	

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



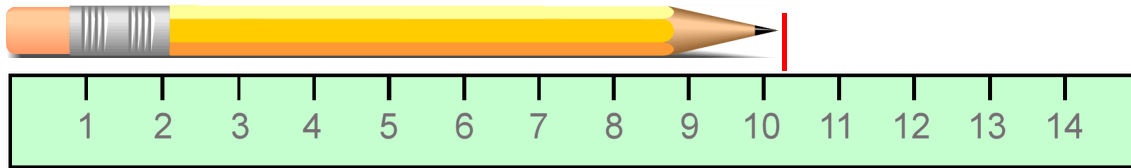
a. How much longer is pencil #1 than pencil #2? \_\_\_\_\_ cm

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

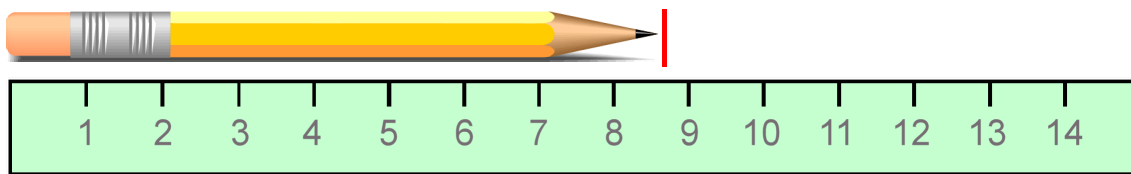


Most things are NOT exactly a certain number of whole centimetres. You can measure them to the nearest centimetre.

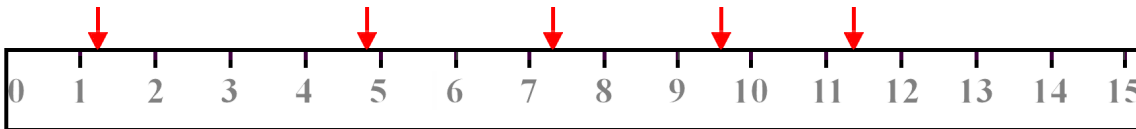
The pencil below is a little over 10 cm long. It is about 10 cm long.



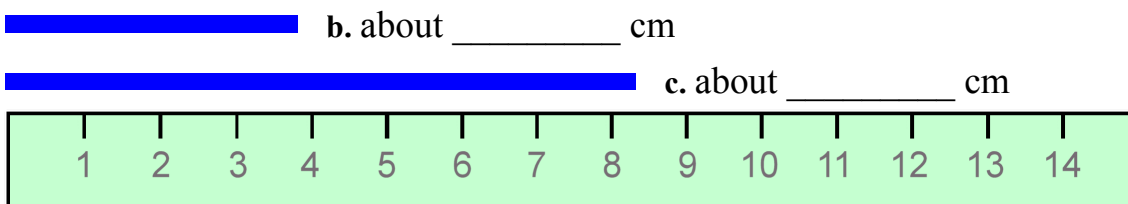
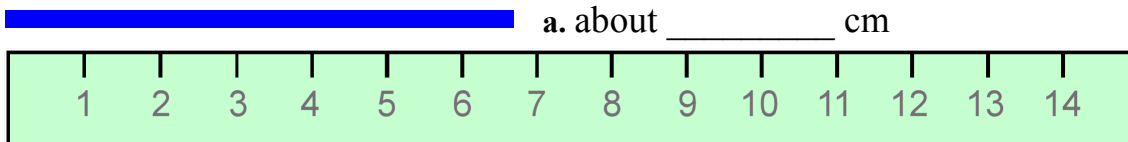
This pencil is about 9 cm long. The end of the pencil is closer to 9 cm than to 8 cm.







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



4. Measure the lines to the nearest centimetre.



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 centimetres longer one is than the other.

The \_\_\_\_\_ is *about* \_\_\_\_\_ cm longer than the \_\_\_\_\_.

b. Find two other small objects. Measure to find *about* how many centimetres 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 centimetres long, then measure it to the nearest centimetre 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

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## Chapter 8: Regrouping in Addition and Subtraction

### Introduction

The eighth chapter of *Math Mammoth Grade 2-B* deals with regrouping in addition (carrying) and in subtraction (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: ten ones form a new ten, and then ten 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 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 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 just putting subtraction word problems in a lesson that is about subtraction. Students need to practise recognizing whether a problem requires addition or subtraction, so 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, which is needed for  $546 - 229$ .
2. Regrouping 1 hundred as 10 tens, which is needed for  $728 - 441$ .
3. Regrouping two times (1 ten as 10 ones, and 1 hundred as 10 tens), which is needed for  $725 - 448$ .
4. Regrouping with zero tens, which is needed for  $405 - 278$ .  
First, we regroup 1 hundred as 10 tens, then 1 ten as 10 ones.

In second grade, we ONLY study cases (1) and (2) from the list above. The other two will be studied in third grade. Again, students first practise 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 .....	73	2 pages
Regrouping 10 Tens as a Hundred.....	75	4 pages
Add in Columns: Regrouping Twice .....	79	4 pages
Regrouping in Subtraction, Part 1 .....	83	3 pages
Regrouping in Subtraction, Part 2 .....	86	3 pages
Regrouping in Subtraction, Part 3 .....	89	3 pages
Word Problems .....	93	3 pages
Mental Subtraction, Part 1.....	96	2 pages
Mental Subtraction, Part 2 .....	98	3 pages
Regrouping One Ten as Ten Ones with 3-Digit Numbers .....	101	3 pages
Regrouping One Hundred as 10 Tens .....	104	4 pages
Graphs and Problems .....	108	2 pages
Euclid's Game .....	110	3 pages
Mixed Revision, Chapters 1 - 8 .....	113	2 pages
Revision, Chapter 8 .....	115	4 pages

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### 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 illustrated 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

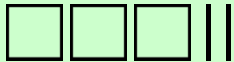

A 10-question quiz involving bar graphs and pictographs.

<http://www.thatquiz.org/tq-5/?-j40v0h-11-p0>

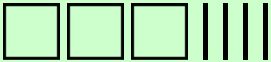

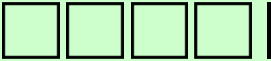
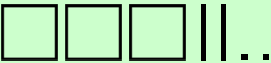

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## Regrouping One Hundred As 10 Tens

<p>We need to subtract 170... but we cannot take away 7 tens because there are only 2 tens.</p> <div style="text-align: center; border: 1px solid black; background-color: #e0ffe0; padding: 5px; margin: 10px 0;">  </div> <p style="text-align: center; margin: 0;"><b>320</b></p>	<p>→ “Break down” 1 HUNDRED as 10 tens. Now we can subtract! Take away 1 hundred and 7 tens.</p> <p>What is left? _____</p> <div style="text-align: center; border: 1px solid black; background-color: #e0ffe0; padding: 5px; margin: 10px 0;">  </div> <p style="text-align: center; margin: 0;"><b>2 hundreds + 12 tens</b></p>
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1. Break down 1 hundred into 10 tens (regroup). Draw squares for hundreds, sticks for tens, and dots for ones. Then take away (subtract) what is asked.

<p>a.  →</p> <p style="text-align: center; margin: 0;"><b>340</b></p>	<p>→ </p> <p style="text-align: center; margin: 0;">_____ hundreds + _____ tens</p> <p style="text-align: center; margin: 10px 0;">Take away 180. What is left? _____</p>
<p>b.  →</p> <p style="text-align: center; margin: 0;"><b>410</b></p>	<p>→ _____ hundreds + _____ tens</p> <p style="text-align: center; margin: 10px 0;">Take away 250. What is left? _____</p>
<p>c.  →</p> <p style="text-align: center; margin: 0;"><b>322</b></p>	<p>→ _____ hundreds + _____ tens + _____ ones</p> <p style="text-align: center; margin: 10px 0;">Take away 171. What is left? _____</p>
<p>d.  →</p> <p style="text-align: center; margin: 0;"><b>254</b></p>	<p>→ _____ hundreds + _____ tens + _____ ones</p> <p style="text-align: center; margin: 10px 0;">Take away 174. What is left? _____</p>

2. First, regroup 1 hundred as 10 tens. Then subtract. The first one is done for you.

<p>a. 4 hundreds 5 tens 7 ones <math>\Rightarrow</math></p> $  \begin{array}{r}  \text{3 hundreds} \quad \text{15 tens} \quad \text{7 ones} \\  - \quad \text{2 hundreds} \quad \text{8 tens} \quad \text{2 ones} \\  \hline  \text{1 hundreds} \quad \text{7 tens} \quad \text{5 ones}  \end{array}  $
<p>b. 7 hundreds 2 tens 1 one <math>\Rightarrow</math></p> $  \begin{array}{r}  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones} \\  - \quad \text{3 hundreds} \quad \text{6 tens} \quad \text{1 one} \\  \hline  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones}  \end{array}  $
<p>c. 3 hundreds 2 tens 0 ones <math>\Rightarrow</math></p> $  \begin{array}{r}  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones} \\  - \quad \text{2 hundreds} \quad \text{5 tens} \quad \text{0 ones} \\  \hline  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones}  \end{array}  $
<p>d. 7 hundreds 0 tens 6 ones <math>\Rightarrow</math></p> $  \begin{array}{r}  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones} \\  - \quad \text{6 hundreds} \quad \text{2 tens} \quad \text{2 ones} \\  \hline  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones}  \end{array}  $
<p>e. 8 hundreds 0 tens 3 ones <math>\Rightarrow</math></p> $  \begin{array}{r}  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones} \\  - \quad \text{5 hundreds} \quad \text{3 tens} \quad \text{1 one} \\  \hline  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones}  \end{array}  $

3. How do you regroup when subtracting  $947 - 282$  (below)? Fill in Jane's explanation.

<p>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. Now I will have only ___ hundreds but I will now get ___ tens. I can now subtract.</p>
<p>9 hundreds 4 tens 7 ones <math>\Rightarrow</math></p> $  \begin{array}{r}  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones} \\  - \quad \text{2 hundreds} \quad \text{8 tens} \quad \text{2 ones} \\  \hline  \quad \text{ hundreds} \quad \text{ tens} \quad \text{ ones}  \end{array}  $

Compare how we write the regrouping when subtracting in columns.

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

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

4. Fill in. Subtract both ways.

a.

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

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

b.

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

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

5. Subtract.

a.

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

b.

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

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. Marsha has 2 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. Lucy and Hilary played a game. Hilary got 192 points and Lucy got 433 points. How many more points did Lucy get than Hilary?


c. Lucy and Hilary played another game. This time Lucy got 215 points and Hilary got 93 points more than Lucy. How many points did Hilary get?


d. Dale and Mack caught some worms before they went fishing. Dale caught 14 worms, which was 11 fewer worms than what Mack caught. How many did Mack catch?

How many did they catch together?

**Puzzle Corner**

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

$$\begin{array}{r}
 \square \square 5 \\
 - 15 \square 3 \\
 \hline
 292
 \end{array}$$

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

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

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

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## Revision, 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.

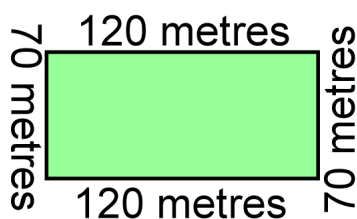
$$\begin{array}{r} 409 \\ 219 \\ + 136 \\ \hline \end{array}$$

2. Susan bought three chairs.  
Each chair 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 metres it is if you walk all 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 maths methods.

<p>a. <math>15 - 7 = \underline{\hspace{2cm}}</math></p> <p><math>55 - 7 = \underline{\hspace{2cm}}</math></p>	<p>b. <math>13 - 5 = \underline{\hspace{2cm}}</math></p> <p><math>93 - 5 = \underline{\hspace{2cm}}</math></p>	<p>c. <math>82 - 77 = \underline{\hspace{2cm}}</math></p> <p><math>45 - 41 = \underline{\hspace{2cm}}</math></p>
<p>d. <math>80 - 71 = \underline{\hspace{2cm}}</math></p> <p><math>100 - 95 = \underline{\hspace{2cm}}</math></p>	<p>e. <math>56 - 40 = \underline{\hspace{2cm}}</math></p> <p><math>56 - 43 = \underline{\hspace{2cm}}</math></p>	<p>f. <math>78 - 35 = \underline{\hspace{2cm}}</math></p> <p><math>33 - 4 = \underline{\hspace{2cm}}</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. Nancy has 23 stuffed toys that she likes, and 16 that she does not like.  
How many stuffed toys does Nancy have?

<hr/>	

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

<hr/>	

d. Linda 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 Linda have now?

<hr/>		

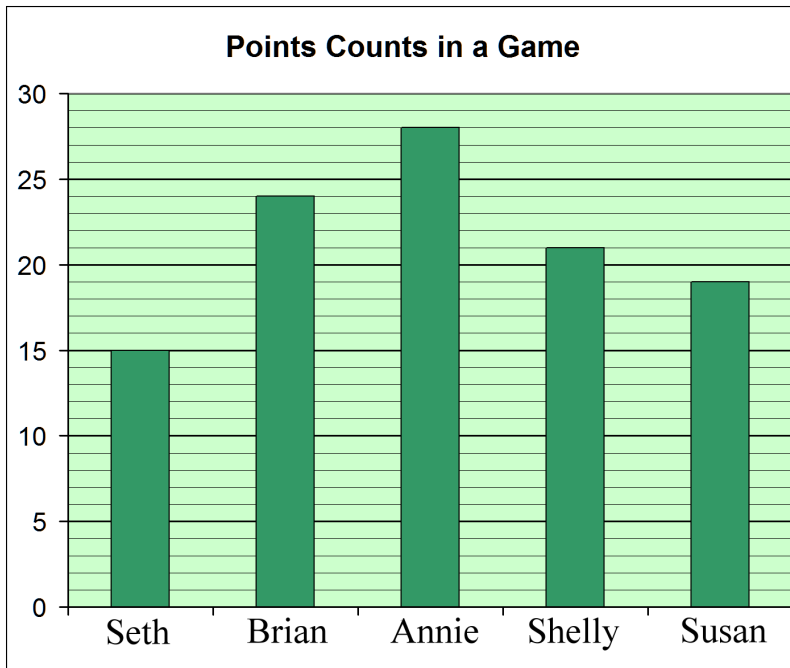
e. Olivia did 26 jumping jacks, which was 14 fewer jumping jacks than what her brother Ben did. How many jumping jacks did Ben do?

<hr/>	

<hr/>	



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



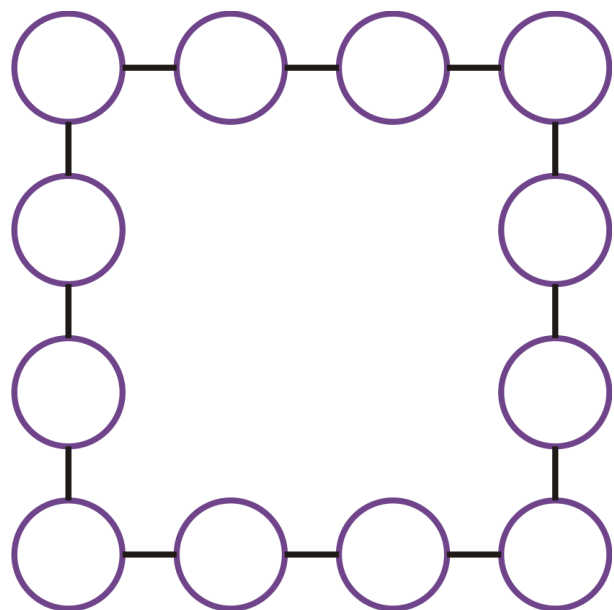
CHILD	POINTS
Seth	15
Brian	
Annie	
Shelly	
Susan	

b. How many fewer points did Brian get than Annie?

c. How many more points did Shelly get than Seth?

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

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# Chapter 9: Money

## Introduction

Chapter 9 of *Math Mammoth Grade 2-B* has to do with Australian Money.

The main goal of this chapter is to be able to count Australian coins and banknotes, and find the amount of money in cents or in dollars. The child learns to write money amounts using dollars and cents, with the decimal point in between.

We also study how to find change by counting up. This topic is studied more in third grade.

The download version of the curriculum includes this chapter also for US, European, British, Canadian, and South African currencies, as separate PDF files.

### The Lessons

	page	span
Counting Coins Revision .....	121	3 pages
Dollars .....	124	5 pages
Change .....	129	3 pages
Counting Change .....	132	2 pages
Mixed Revision, Chapters 1 - 9 .....	134	3 pages
Revision, Chapter 9 .....	137	1 page

### Helpful Resources on the Internet

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

**Disclaimer:** *These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

#### Counting coins worksheets

Create free worksheets for counting all Australian coins and some banknotes. You can choose the number of coins, the maximum total amount, and the number of problems.

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

#### Change Maker

Get as much money in your piggy bank as possible by working out the correct change.

Easy, Medium, hard, and super brain levels. Playable in five currencies, including Australian.

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

#### Count Money Worksheets

Choose either notes or coins, the number of coins, the number of problems, and more options.

Worksheets are randomly generated.

<http://www.theteacherscorner.net/printable-worksheets/make-your-own/money-worksheets/>

Sample worksheet from  
[www.mathmammoth.com](http://www.mathmammoth.com)

**Money Memory Game**

Match coins/notes with money amounts. You can choose your currency and the size of the memory game.

<http://www.dr-mikes-math-games-for-kids.com/money-memory-game.html?cur=aud>

**Money Master**

Drag coins to the work area to match the given amount, or give change.

<http://www.mathsisfun.com/money/money-master.html>

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# Change

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

A sweet costs 55 cents. You do not have the coins to make exactly 55 cents, so you give the shopkeeper 60 cents. That is 5 cents too much! So, the shopkeeper gives you back 5 cents, which is your change.









 <b>Price: 55 c</b>	<b>You have:</b>  <b>60 c</b>	<b>Your change:</b>  <b>5 c</b>
---	--	--





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

In the problems below, work out 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 is your change.






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

1. Write how many cents you give, and how many cents you get back in change.

<p><b>a.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>Price: \$1.10</b> </div> <div style="text-align: center;"> <p><b>You have:</b></p>               \$ _____ c         </div> <div style="text-align: center;"> <p><b>Change:</b></p>               _____ c         </div> </div>	<p><b>b.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>Price: 30 c</b> </div> <div style="text-align: center;"> <p><b>You have:</b></p>               _____ c         </div> <div style="text-align: center;"> <p><b>Change:</b></p>               _____ c         </div> </div>
<p><b>c.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>Price: \$4.50</b> </div> <div style="text-align: center;"> <p><b>You have:</b></p>               \$ _____         </div> <div style="text-align: center;"> <p><b>Change:</b></p>               _____ c         </div> </div>	<p><b>d.</b></p> <div style="display: flex; justify-content: space-around; align-items: center;"> <div style="text-align: center;">   <b>Price: 45 c</b> </div> <div style="text-align: center;"> <p><b>You have:</b></p>               _____ c         </div> <div style="text-align: center;"> <p><b>Change:</b></p>               _____ c         </div> </div>

<p>e. <b>You have:</b>  <b>Change:</b></p> <p>Price: \$4.95      \$ _____ c</p>	<p>f. <b>You have:</b>  <b>Change:</b></p> <p>Price: 90 c      _____ c      _____ c</p>
<p>g. <b>You have:</b>  <b>Change:</b></p> <p>Price: \$1.85      \$ _____ c</p>	<p>h. <b>You have:</b>  <b>Change:</b></p> <p>Price: 70 c      _____ c      _____ c</p>


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

<p>a. You bought a lollipop for \$1.50.</p>	<p><b>You have:</b>  <b>Change:</b> _____ c</p>
<p>b. You bought a chocolate bar for \$2.05.</p>	<p><b>You have:</b>  <b>Change:</b> _____ c</p>
<p>c. You bought a pen for \$2.90.</p>	<p><b>You have:</b>  <b>Change:</b> _____ c</p>
<p>d. You bought a sharpener for \$2.25.</p>	<p><b>You have:</b>  <b>Change:</b> _____ c</p>
<p>e. You bought juice for \$1.75.</p>	<p><b>You have:</b>  <b>Change:</b> _____ c</p>

3. Practise some more! Work out the change.

<p>a. A popsicle costs \$1.90. You give \$2.</p> <p>Change: _____ c</p>	<p>b. A ruler costs \$1.75. You give \$2.</p> <p>Change: _____ c</p>	<p>c. A book costs \$9.30. You give \$10.</p> <p>Change: _____ c</p>
<p>d. A toy costs \$9.70. You give \$10.</p> <p>Change: _____ c</p>	<p>e. A stencil set is \$9.10. You give \$10.</p> <p>Change: _____ c</p>	<p>f. A bag of coffee costs \$7.20. You give \$8.</p> <p>Change: _____ c</p>

4. You buy a lot of items. First add their prices to work out the total.  
Then work out the change. Draw the coins that could be your change.

<p>a. A gum ball costs 50 c. You bought three of them. You gave \$2.00.</p> <p><u>Total cost: \$1.50</u></p> <p><u>Change: \$0.50</u></p> 
<p>b. An apple costs \$1 and crackers cost \$3. You gave \$5.00.</p> <p>Total cost: \$ _____</p> <p>Change: \$ _____</p>
<p>c. A lollipop costs \$1.50. You bought two of them. You gave \$4.00.</p> <p>Total cost: \$ _____</p> <p>Change: \$ _____</p>
<p>d. A marker costs \$2. You bought two of them. You gave \$5.00.</p> <p>Total cost: \$ _____</p> <p>Change: \$ _____</p>
<p>e. Chalk costs \$3 and paper clips costs \$0.50. You gave \$4.00.</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-B* covers the concept of multiplication, its connection with repeated addition, and some easy multiplication practice.

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

The actual study and memorisation 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 memorisation.

If the time allows and the student is receptive, you can study multiplication tables even further at this time.

### The Lessons

	page	span
Many Times the Same Group .....	140	3 pages
Multiplication and Addition .....	143	4 pages
Multiplying on a Number Line .....	147	3 pages
Multiplication Practice .....	150	2 pages
Mixed Revision, Chapters 1 - 10 .....	152	3 pages
Revision, Chapter 10 .....	155	2 pages

### Helpful Resources on the Internet

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

**Disclaimer:** *These links were valid as of the writing of this book, and to the best of our knowledge we believe these websites to have what is described. However, we cannot guarantee that the links have not changed. Parental supervision is recommended.*

#### **Math Dice Game for Addition and Multiplication**

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

<http://www.teachingwithtltc.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>

**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 for skip-counting. 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.

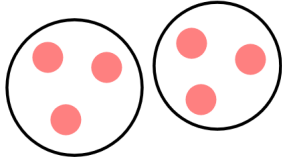
<http://www.free-training-tutorial.com/skip-counting-games.html>

## Many Times the Same Group

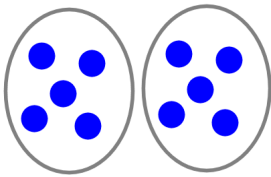
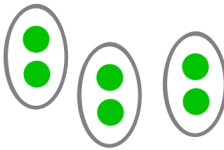
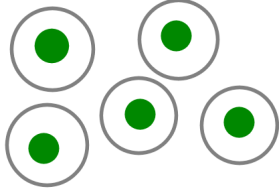
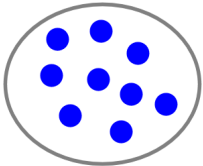
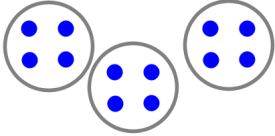

1. Write.

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.

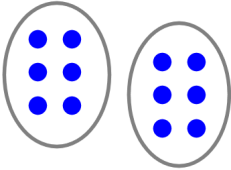
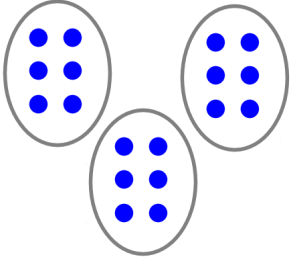
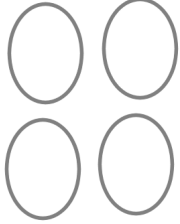

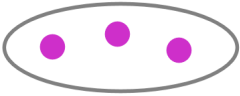
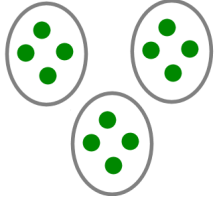
 <p>a. <u>2</u> times <u>5</u></p>	 <p>b. _____ times _____</p>	 <p>c. _____ times _____</p>
 <p>d. _____ times _____</p>	 <p>e. _____ times _____</p>	 <p>f. _____ times _____</p>

<p style="text-align: center;"><math>5 \times 3</math></p> <p>This means “5 times a group of 3.”</p> <p>It is called <b>multiplication</b>.</p>	<p style="text-align: center;"><math>2 \times 7</math></p> <p>This means “2 times a group of 7.”</p> <p>You <i>multiply</i> 2 times 7.</p>
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4. Now it’s 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>

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

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

6. Draw the groups. Write the total.

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