math MAMMOTH

Grade 1-A Worktext
International Version

Light Blue Series

- **A**ddition concept and facts within 0 - 10
- **S**ubtraction within 0 - 10
- **C**onnection between addition and subtraction
- **G**raphs
- **T**wo digit numbers and place value within 0 - 100

By Maria Miller

Contents

Chapter 3: Place Value 0-100

Foreword

Math Mammoth International Version Grade 1-A and *Grade 1-B* worktexts comprise a complete maths curriculum for the first grade mathematics studies.

This curriculum is essentially the same as the version of Math Mammoth Grade 1 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 first grade standards in your country. However, you can probably find material for any missing topics in neighbouring grades. For example, let's say that your country mandates the study of multiplication tables in grade (year) 4. That material is not found in Math Mammoth Grade 4, but it does appear in Math Mammoth Grade 3-A. So, you can simply re-order the material to solve most incompatibilities between different standards.

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.
- The paper size is A4.

The four main areas of study for first grade are:

1. Learning the concepts of addition and subtraction, and strategies for remembering addition and subtraction facts (chapters 1-2 and chapter 4);

2. Developing understanding of whole number relationships and place value up to 100 (chapter 3 and chapter 7);

3. Developing the concept that measuring is a process of repeating basic units of length or some other measure (chapter 6); and

4. Reasoning about attributes of geometric shapes, such as the number of sides and the number of corners, and composing and decomposing geometric shapes (chapter 6).

Additional topics we study in the first grade are telling time to the half hour (chapter 5) and counting coins (chapter 8).

This book, *Grade 1-A*, covers the concepts of addition and subtraction (chapters 1 and 2) and place value with two-digit numbers (chapter 3). The book *Grade 1-B* covers strategies for addition and subtraction facts, the clock, shapes and measuring, adding and subtracting with two-digit numbers, and counting coins.

When you use these two books as your main or only 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. After a bit of a break and a fresh approach, the chances are good that the student will be able to get past the concept that he or she was stuck on before.

The Math Mammoth program concentrates on a few major topics at a time, in order to study them in depth, while at the same time including revision problems from past topics. 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.

This does not mean that your child will not need an occasional extra revision. Indeed, when each major topic is presented in its own chapter, this gives you more freedom to plan the course of study yourself to set appropriate times for revision. In fact, I encourage you to plan your mathematics school year in terms of the topics covered, instead of in terms of a certain range of pages from a book.

In order to realize any needed extra revision, the download version includes an html page called *Make_extra_worksheets_grade1.htm* that you can use to make additional worksheets for computation or for number charts. You can also reprint some previously studied pages. Chapter 4 contains a lot of pages with problems that practise addition and subtraction facts, so you might choose to "save" some of these as an "extra worksheets file," which makes them available to use for later revision.

I wish you success in teaching maths!

Maria Miller, the author

Chapter 0: Grade K Maths Revision

Introduction

This chapter is optional and can be used to revise the most important concepts of kindergarten maths:

- writing the numerals 0 to 9;
- counting up to 20;
- position words, colour words and some shapes (circle, triangle, square);
- simple patterns.

The Lessons in Chapter 0

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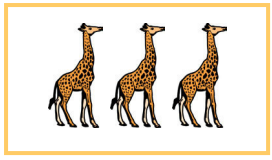
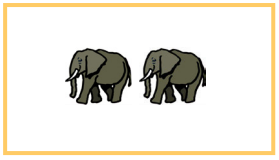
Counting

1. Count. Write the number in the box.


a. ☐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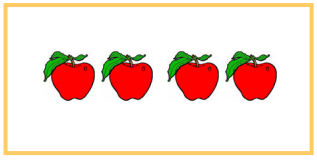
c. ☐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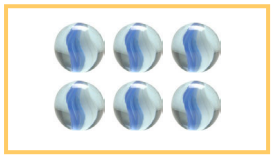
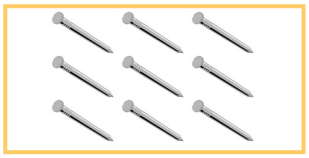
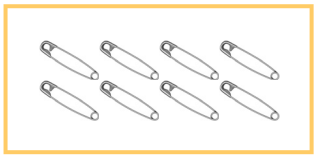
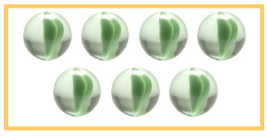
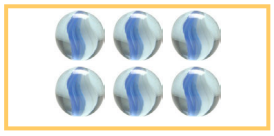

e. ☐


f. ☐


g. ☐


h. ☐

2. Count. Write the number. Then circle the number that is MORE.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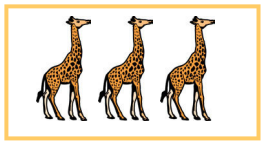
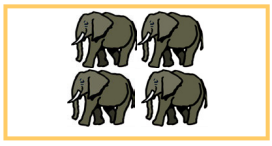
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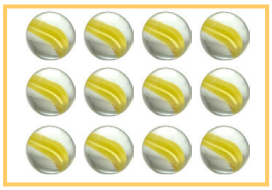
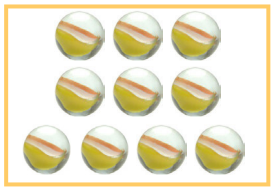
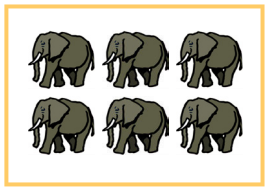
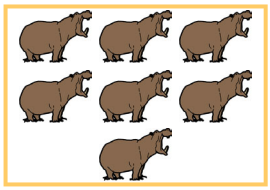
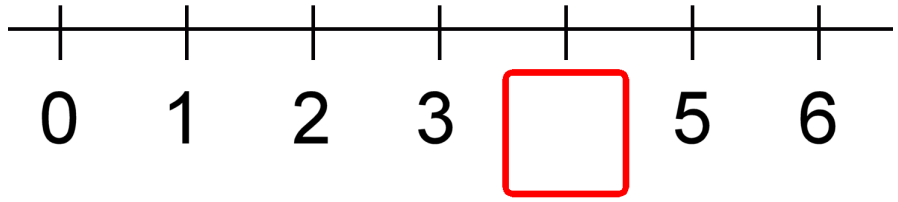


c. ☐ ☐



d. ☐ ☐

3. Write the missing number below the number line.

a.



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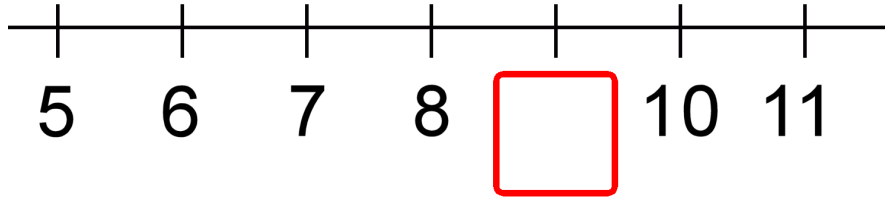

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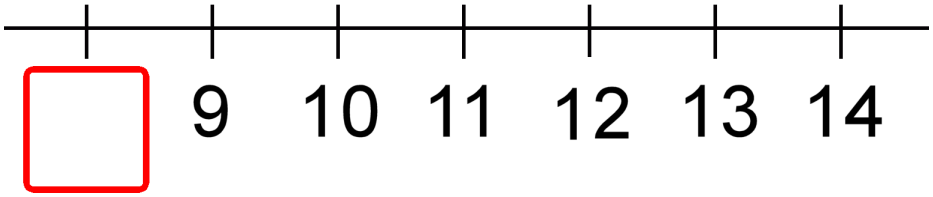
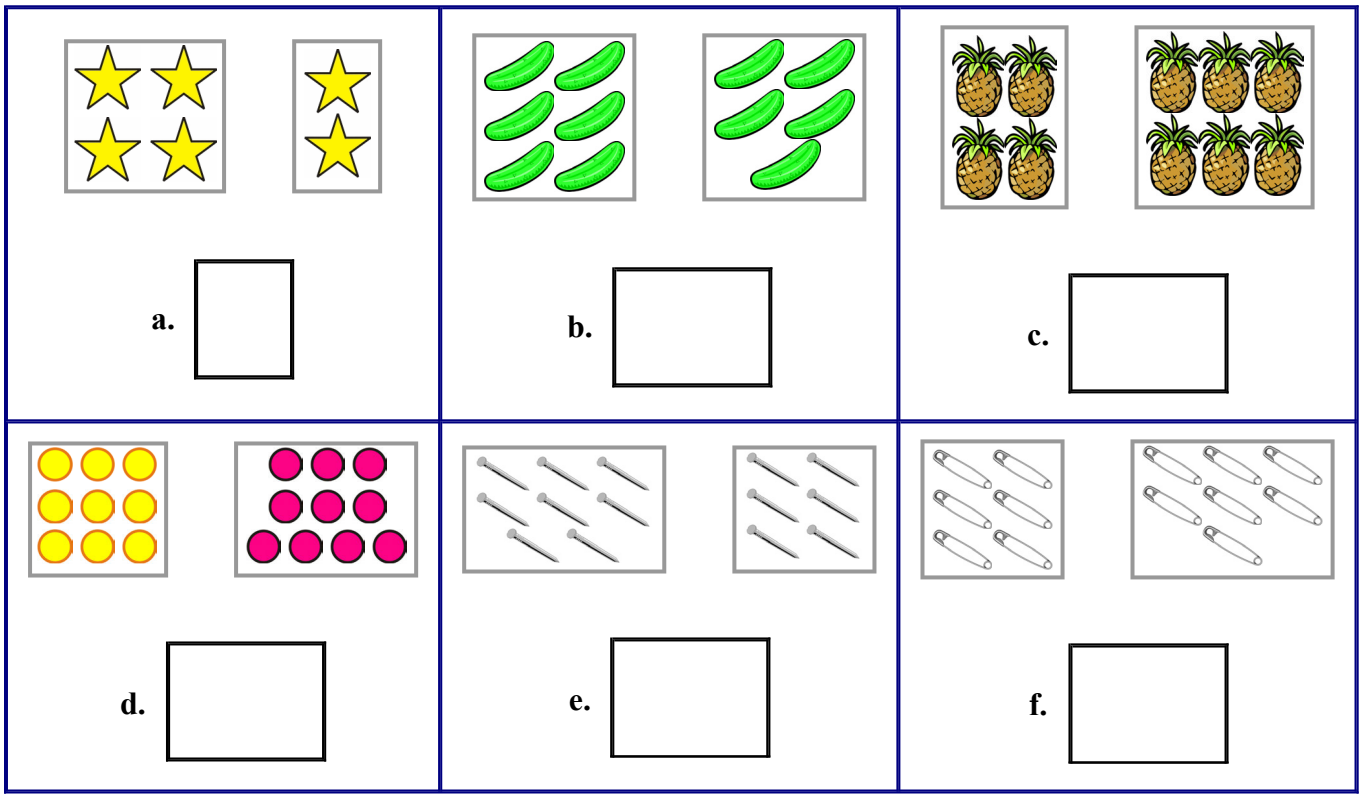
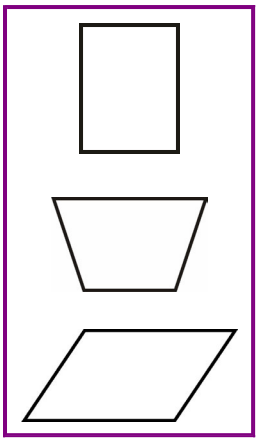


4. Circle the group that has more things. Then count them ALL (both groups). Write the number in the box below.

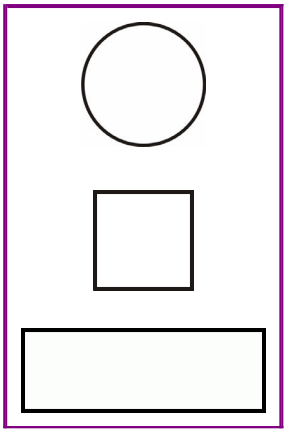


Position Words, Colours and Shapes

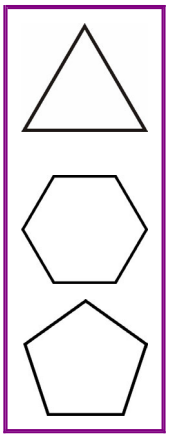
1. **a.** Colour the top shape RED.



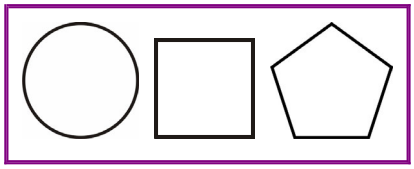
b. Colour the bottom shape BLUE.



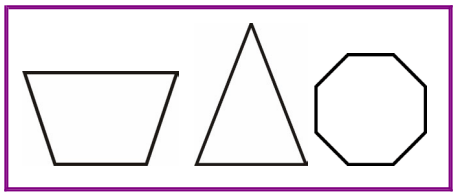
c. Colour the middle shape YELLOW.



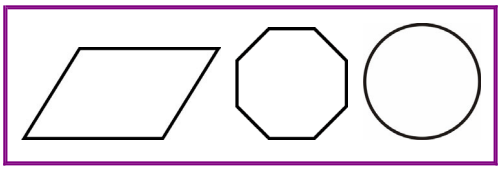
2. **a.** Colour the shape on the right GREEN.



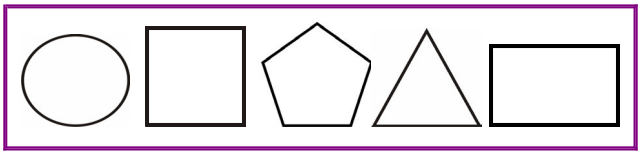
b. Colour the shape in the middle BLUE.



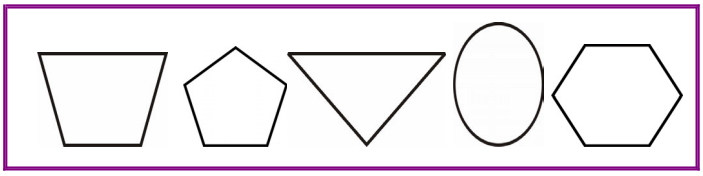
c. Colour the shape on the left YELLOW.



d. Colour the two shapes on the right ORANGE.



e. Colour the two shapes on the left PURPLE.



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Chapter 1: Addition Within 0-10
Introduction

The first chapter of *Math Mammoth Grade 1-A* concentrates on the concept of addition and addition facts within 0-10. Keep in mind that the specific lessons in the chapter can take several days to finish. They are not "daily lessons."

The chapter starts out with very easy addition problems, using pictures, with numbers 0-5, where children can simply count the objects to add. You can also easily adapt these early lessons to be done with manipulatives (concrete objects such as blocks, beads, *etc*.).

If the student does not yet know the symbols " + " and " = ", you can introduce them *orally* at first. Use blocks or other objects to make addition problems and say: "Three blocks and four blocks makes seven blocks. Three blocks *plus* four blocks *equals* seven blocks." Then ask the child to make an addition with the objects, using those words. Play like that until the child can use the words "plus" and "equals" in his or her own speech. This will also make it easier to learn to use the written symbols.

In the lesson *Which is More?*, the symbols " < " and " > " are introduced as being like a "hungry alligator's mouth." In this lesson, children only compare numbers, such as $5 < 7$. In later lessons, children will also learn to compare expressions, such as $2 + 3 < 4 + 4$.

Soon we introduce "missing addend" problems: problems like $1 + \_\_\_ = 5$ where one of the numbers to be added is missing. First, we use pictures, and then gradually use only symbols. These problems are very important, as they lead the child to learn the connection between addition and subtraction.

Children might confuse the missing addend problem $1 + \_\_\_ = 5$ with $1 + 5 = \_\_\_$. To help the child see the difference, you can word these problems like this: "One and how many more makes five?"

You can model missing addend problems by drawing. In our example problem ($1 + \_\_\_ = 5$), the teacher would first draw one ball and then tell the student, "We need a total of five balls. Draw more balls until there are five of them." You can say, "First there was one ball, then you needed to add (draw) some more to make 5. How many more did you draw?"

Then we come to the lesson *Sums with 5*. It practises the number combinations that add up to 5, which are 0 and 5, 1 and 4, and 2 and 3. After that we study sums with 6, sums with 7, and so on. The goal of these lessons is to help the child to memorise addition facts within 10.

However, your child does not need to memorise them yet. All of these lessons are building toward that goal, but the final mastery of addition facts does not have to happen this early in 1st grade.

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

1. Structured drill, such as you see in the lessons *Sums with 5*, *Sums with 6*, and so on. These are not random drills, because you will start by showing the pattern or the structure in the facts. This will help the child to tie in the addition facts with a context to better understand the facts on a conceptual level, instead of merely memorising them at random. In *Sums with 5*, the child learns the number combinations that add up to 5: 0 and 5, 1 and 4, and 2 and 3. This understanding is the basis for the drills.
2. Using addition facts in games, in maths problems, everyday life, or anywhere else. Games are especially useful because they help children to like mathematics.
3. Random drilling may also be used, sparingly, as one tool among others.
4. Memory helps such as silly mnemonics or writing maths facts on a poster and hanging it on the wall. Not all children need these, but feel free to use them if you like.

Children will need LOTS of opportunities to add in order to memorise the facts, so the memorisation may not occur totally as the child works through this chapter. These same addition facts are further studied and used in the chapter about subtraction and in all later maths work. I recommend that children become fluent with addition facts within 0-10 by the end of first grade.

Another important thread running through the chapter is to develop children's understanding of the symbols +, <, and > . Children need to get used to equations like 9 = 5 + 4 and inequalities like 2 < 5 + 4. They need to understand the equation 2 + ___ = 6 correctly as an unknown addend problem, and not as the addition problem 2 + 6, as I mentioned before. We need to prevent the misconception of the equal sign being an "operator," as if it means that you need to add/subtract/multiply/divide, or "operate" on the numbers in the equation. A child with this misconception will treat the equation 9 = __ + 4 as an addition problem 9 + 4.

We also study addition on a number line, which is an important way to model addition. Children also encounter addition tables, number patterns, word problems, and get used to a symbol for the unknown number (a geometric shape, such as in $\square$ + 5 = 10). So, while it may look on the surface that all we do is add small numbers, actually a lot happens in this chapter!

I have published a set of free video lessons that match the lessons in this chapter at
http://www.mathmammoth.com/videos/grade_1/1st-grade-math-videos.php

Please also see the following page for a few games that I recommend while studying this chapter. Games are important at this level, as they help children practise the addition facts and also make maths fun.

The Lessons in Chapter 1

Games

10 Out (or *5 Out* or *6 Out etc.)*

You need: Lots of number cards with numbers 1-10, such as regular playing cards without the face cards, or any other cards that have numbers on them.

Rules: Deal seven cards to each player. Place the rest face down in a pile in the middle of the table. On beginning his turn, each player may first take one card from the pile. Then that player may ask for one card from the player on the right (as in "Go Fish"), and if the player on the right has it, must give it to the player who asked. Then the player whose turn it is may discard the card 10 or any two cards in his/her hand that add up to 10. The player who first discards all the cards from his/her hand is the winner.

Variations:
* Deal more than seven cards.
* Deal fewer cards if there are a lot of players or the players are very young.
* Allow players to discard *three* cards that add up to 10.
* Instead of ten, players discard cards that add up to 9, 8, 11, or some other number. Use the face cards Jack, Queen and King for 11, 12, and 13.

Some Went Hiding

You need: The same number of small objects as the sum you are studying. For example, to study the sums with 5, you need 5 objects (marbles, blocks, or whatever).

Rules: The first player shows the objects but quickly hides some of them behind his/her back without showing how many. Then he/she shows the remaining objects to the next player, who has to say how many "went hiding." If the player gives the right answer, it is then his/her turn to hide some and ask the next player to answer. If he/she gives a wrong answer, he/she forfeits his/her turn. This game appeals best to young children.

Variation: Instead of getting a turn to hide objects, the player who answers correctly may gain points or other rewards for the right answer.

Addition Battle

You need: A standard deck of playing cards from which you remove the face cards and perhaps also some of the other higher-numbered cards, such as tens, nines, and eights. Alternatively, a set of dominoes works well for children who do not yet know their numbers beyond 12.

Rules: In each round, each player is dealt two cards face up, and has to calculate the sum or difference (add/subtract). The player with the highest sum or difference gets all the cards from the other players. After enough rounds have been played to use all of the cards, the player with the most cards wins.

If two or more players have the same sum, then those players get an additional two cards and "battle" with those to resolve the tie.

Variations:
* This game is easily adapted for subtraction, multiplication, and fractions.
* You can also use dominoes instead of two playing cards.

Any ***board game*** where you move the piece by rolling two dice also works to practise addition.

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

First Grade Math Video Lessons by Maria
The author's own videos that match the lessons in this chapter.
http://www.mathmammoth.com/videos/grade_1/1st-grade-math-videos.php

Addition Exercise from Dositey.com
Write how many worms are on each of two leaves and how many in total.
http://www.dositey.com/addsub/addex1.htm

Children's Addition Quiz
A set of five interactive addition problems that you answer online.
http://www.thegreatmartinicompany.com/Math-Quick-Quiz/addition-kid-quiz.html

Number Bond Machines
Practise which two numbers add up to a given number.
http://www.amblesideprimary.com/ambleweb/mentalmaths/numberbond.html

Save the Whale
Find how much the given "pipe" length needs to make it 10 long and save the whale.
http://www.ictgames.com/save_the_whale_v4.html

Fun 4 The Brain
Practise your basic facts with these simple games that appeal to children.
http://www.fun4thebrain.com/addition.html

Addition and Subtraction Game from The Little Animals Activity Centre
Solve simple addition and subtraction problems by clicking on the ladybug with the right answer.
http://www.bbc.co.uk/schools/laac/numbers/chi.shtml

Number Line Arithmetic
Use this virtual manipulative to illustrate addition on a number line.
http://nlvm.usu.edu/en/nav/frames_asid_156_g_1_t_1.html

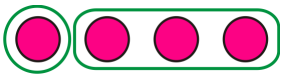
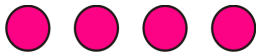
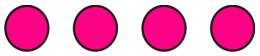
Line Jumper
Solve addition problems on a number line.
http://www.funbrain.com/funbrain/linejump/index.html

Sum Stacker
Drag dice from stack to stack until the sums of each stack equal the sums given.
http://www.carstensstudios.com/mathdoodles/sumsstacker.html

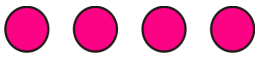
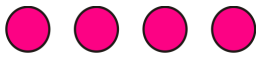
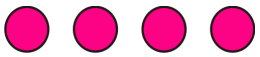
Tux Math
A versatile arcade game for maths facts with many options. Includes all operations. You need to shoot falling comets that can damage the penguins' igloos. **Price:** Free.
http://sourceforge.net/projects/tuxmath
See also my review: **http://www.homeschoolmath.net/reviews/tux_math.php**

Two Groups and a Total

1. Make two groups.

a. 4  1 and 3	**b.** 4  2 and 2	**c.** 4  3 and 1
d. 5  3 and 2	**e.** 5  2 and 3	**f.** 5  1 and 4

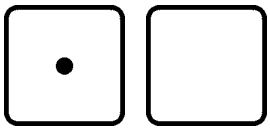
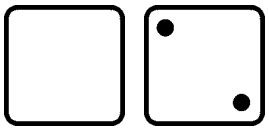
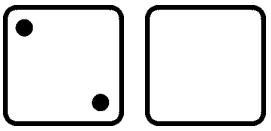
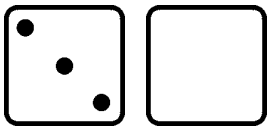
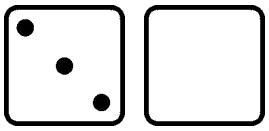
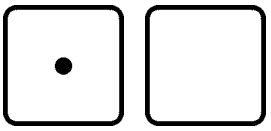
2. Make two groups. Write how many are in the second group.

a. 4  1 and _____	**b.** 4  2 and _____	**c.** 4  3 and _____
d. 5  4 and _____	**e.** 5  3 and _____	**f.** 5  2 and _____
g. 5  1 and _____	**h.** 5  5 and _____	**i.** 5  0 and _____

3. Draw as many dots as the number shows. Then divide them into two groups. (There are many ways to do this.) Write how many are in each group.

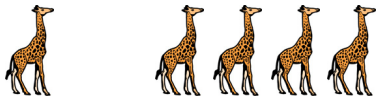
a. 3 _____ and _____	**b.** 5 _____ and _____	**c.** 4 _____ and _____
d. 2 _____ and _____	**e.** 6 _____ and _____	**f.** 8 _____ and _____

4. The number at the top is the total. Draw the missing dots on the face of the blank dice. Write on the lines how many dots are on the face of each dice.

a. 3  _____ and _____	**b.** 6  _____ and _____	**c.** 5  _____ and _____
d. 4  _____ and _____	**e.** 6  _____ and _____	**f.** 5  _____ and _____

2 and 2 [4]

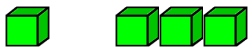
"Two and two makes four."



1 and 4 [5]

"One and four makes five."

5. Write how many are in each group. Write the total in the box.

a.  _____ and _____	**b.**  _____ and _____	**c.**  _____ and _____
d.  _____ and _____	**e.**  _____ and _____	**f.**  _____ and _____
g.  _____ and _____	**h.**  _____ and _____	**i.**  _____ and _____

6. Draw circles for each number. Write the total in the box.

a. 2 and 2	**b.** 3 and 1
c. 3 and 3	**d.** 1 and 4

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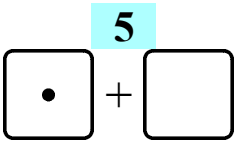
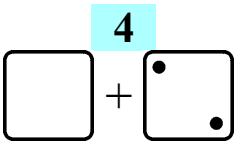
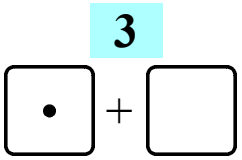
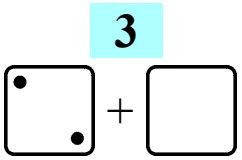
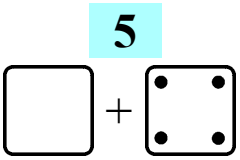
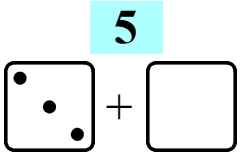
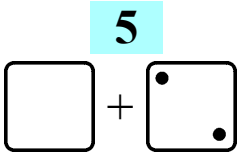
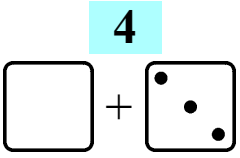
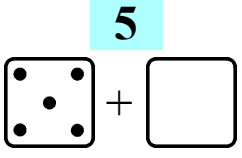
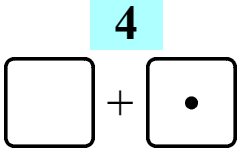
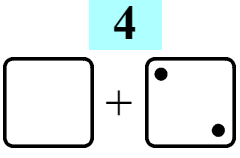
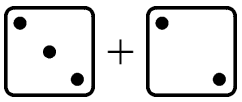
Missing Items

Something is missing from the addition. The TOTAL is not missing. The total is 5. How many are in the second group? That is what is missing! There should be a total of 5 dots. Draw 4 on the face of the second dice.	 1 + _____
There should be a total of 4 dots. The face of the second dice has two. There are none on the face of the first dice, so you need to draw them. Read: "2 plus what number makes 4?" or, "2 and how many more makes 4?" or, "What number and 2 makes 4?"	 _____ + 2

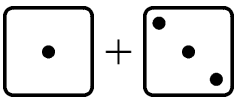
1. Complete the addition. Draw the missing dots. The total is on top.

 **a.** 1 + _____	 **b.** 2 + _____	 **c.** _____ + 4
 **d.** 3 + _____	 **e.** _____ + 2	 **f.** _____ + 3
 **g.** 5 + _____	 **h.** _____ + 1	 **i.** _____ + 2



3 + _____ = 5

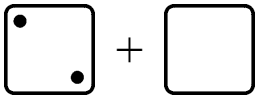
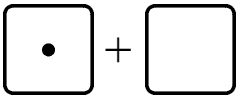
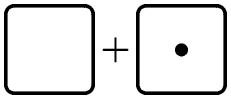
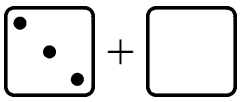
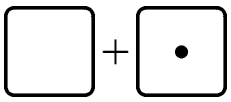
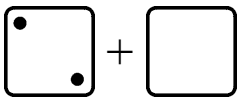
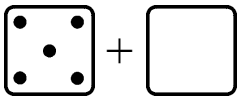
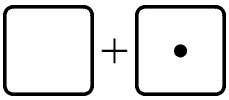
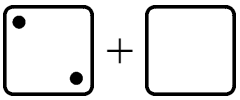
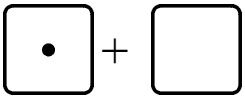
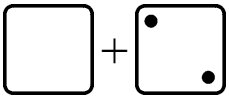
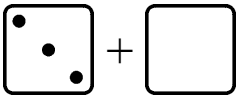
The TOTAL is now written after the equal sign " = ".
The answer is 3 + 2 = 5



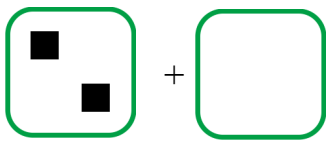
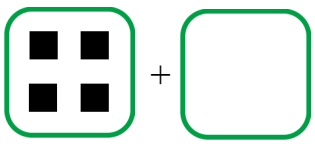
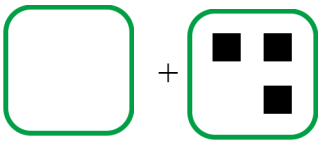
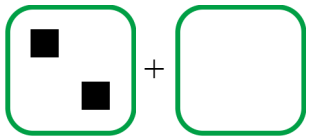
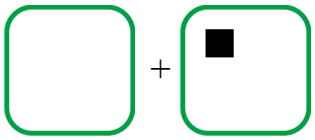
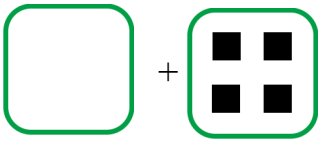
_____ + 3 = 4

See the TOTAL written after the equal sign " = ".
The answer is 1 + 3 = 4

2. Draw more dots to show the missing number. Write the missing number.

a.  2 + _____ = 4	**b.**  1 + _____ = 1	**c.**  _____ + 1 = 5
d.  3 + _____ = 5	**e.**  _____ + 1 = 4	**f.**  2 + _____ = 3
g.  5 + _____ = 5	**h.**  _____ + 1 = 3	**i.**  2 + _____ = 5
j.  1 + _____ = 5	**k.**  _____ + 2 = 2	**l.**  3 + _____ = 4

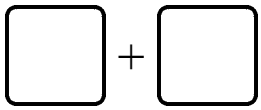
3. Draw squares in the empty box for the missing number. Read the problems aloud: "2 plus how many makes 4?"

 **a.** 2 + _____ = 4	 **b.** 4 + _____ = 4	 **c.** _____ + 3 = 4
 **d.** 2 + _____ = 5	 **e.** _____ + 1 = 3	 **f.** _____ + 4 = 5

There are no dots on the face of either dice.

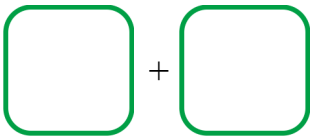
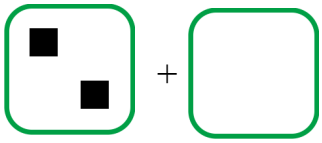
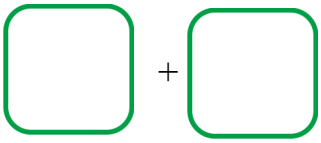
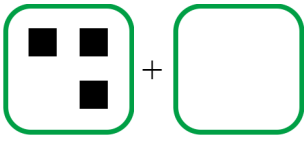
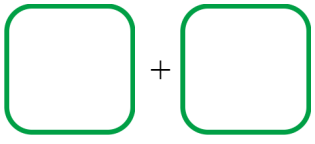
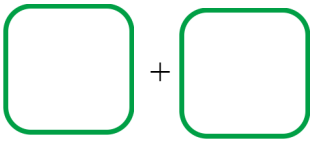
The face of the first dice is missing its dots. The face of the second is *supposed* to have none, since there is a zero below it.

Draw 4 dots on the face of the first dice, because 4 + 0 = 4.

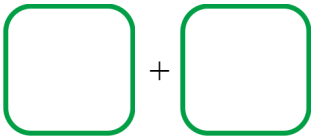
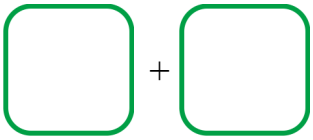
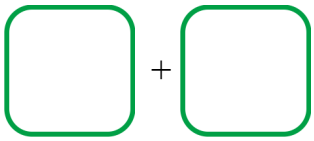
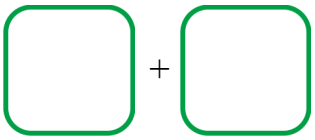
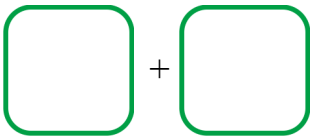
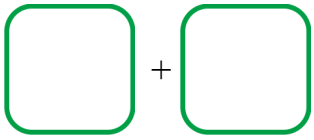
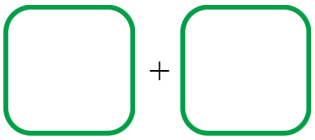
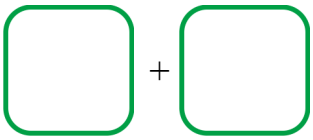
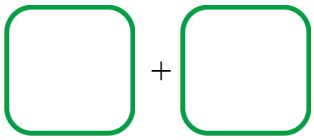


____ + 0 = 4

4. Draw squares in the boxes for the missing numbers. Notice that some groups are supposed to have zero dots.

 **a.** 0 + _____ = 4	 **b.** 2 + _____ = 2	 **c.** _____ + 0 = 3
 **d.** 3 + _____ = 3	 **e.** _____ + 0 = 2	 **f.** 0 + _____ = 1

5. Draw dots to illustrate each addition problem. Find what number is missing.

 **a.** $4 + \_\_\_\_\_ = 5$	 **b.** $1 + \_\_\_\_\_ = 2$	 **c.** $\_\_\_\_\_ + 3 = 5$
 **d.** $3 + \_\_\_\_\_ = 4$	 **e.** $2 + \_\_\_\_\_ = 3$	 **f.** $\_\_\_\_\_ + 2 = 4$
 **g.** $1 + \_\_\_\_\_ = 5$	 **h.** $\_\_\_\_\_ + 1 = 4$	 **i.** $3 + \_\_\_\_\_ = 3$

6. Solve. Now, the missing number goes inside the shape. You can draw dots to help you. Remember, the number after the " = " sign is the total.

a. $2 + \square = 5$	**b.** $\square + 2 = 4$	**c.** $\square + 1 = 3$
d. $\square + 3 = 3$	**e.** $3 + \square = 5$	**f.** $0 + \square = 2$
g. $3 + \square = 4$	**h.** $\square + 2 = 4$	**i.** $\square + 1 = 5$

7. Practise "normal" addition.

a. $1 + 1 =$ _____ $2 + 1 =$ _____	**b.** $4 + 0 =$ _____ $3 + 1 =$ _____	**c.** $1 + 4 =$ _____ $2 + 2 =$ _____
d. $2 + 3 =$ _____ $1 + 4 =$ _____	**e.** $0 + 5 =$ _____ $1 + 2 =$ _____	**f.** $3 + 2 =$ _____ $4 + 1 =$ _____

8. Find the missing number. The marbles illustrate the total. Notice the patterns!

a.  $0 +$ _____ $= 3$ $1 +$ _____ $= 3$ $2 +$ _____ $= 3$ $3 +$ _____ $= 3$	**b.**  $0 +$ _____ $= 4$ $1 +$ _____ $= 4$ $2 +$ _____ $= 4$ $3 +$ _____ $= 4$ $4 +$ _____ $= 4$	**c.**  $0 +$ _____ $= 5$ $1 +$ _____ $= 5$ $2 +$ _____ $= 5$ $3 +$ _____ $= 5$ $4 +$ _____ $= 5$ $5 +$ _____ $= 5$

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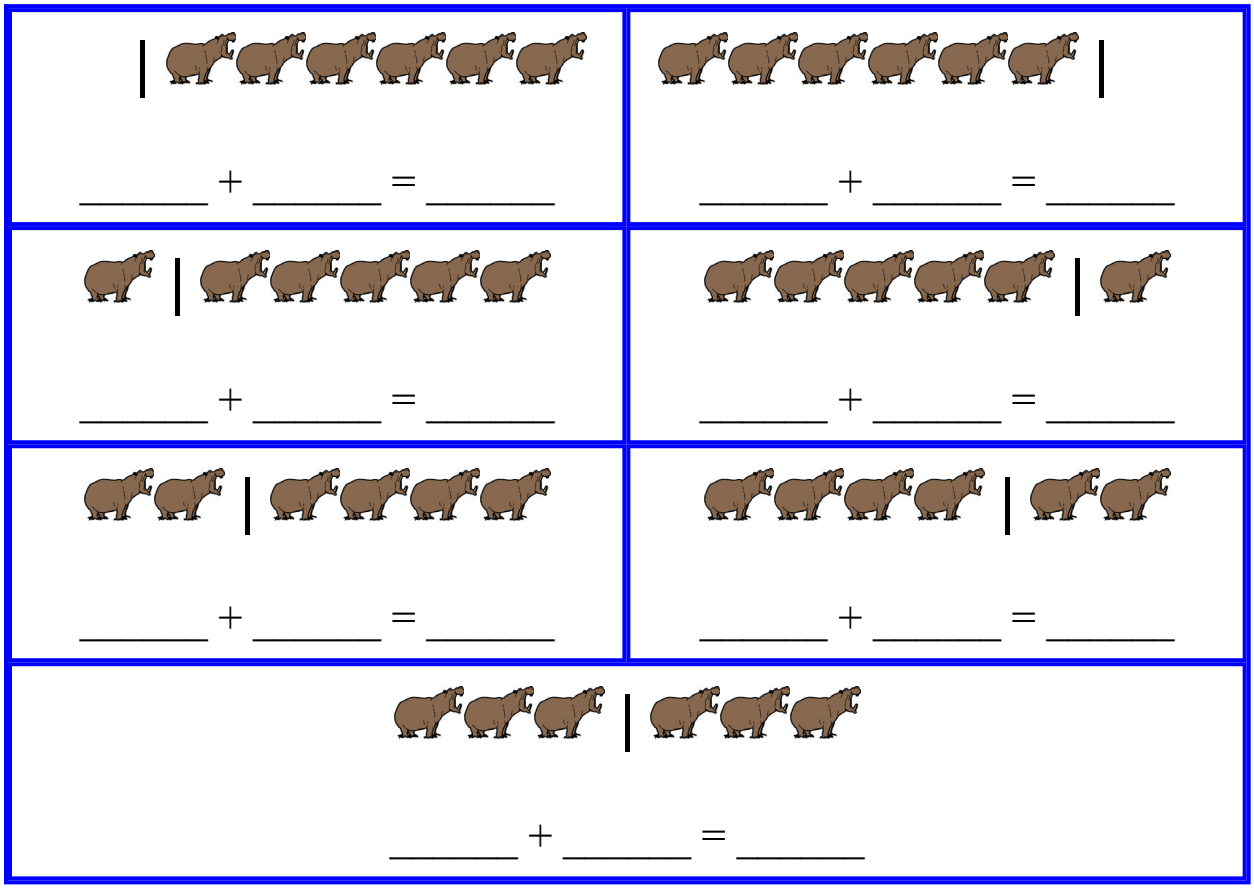
Sums with 6

1. Here are some different ways to group six hippos into two groups. Write the addition sentences.



2. Play "6 Out" *and/or* "Some Went Hiding" with 6 objects (see the introduction).

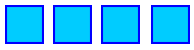
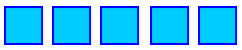
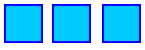
3. **Drill.** Don't write the answers but just solve them in your head.

1 + ☐ = 6	4 + ☐ = 6	☐ + 2 = 6	☐ + 3 = 6
2 + ☐ = 6	3 + ☐ = 6	☐ + 0 = 6	☐ + 1 = 6
6 + ☐ = 6	5 + ☐ = 6	☐ + 4 = 6	☐ + 5 = 6

4. Add the numbers and write the total on the line.

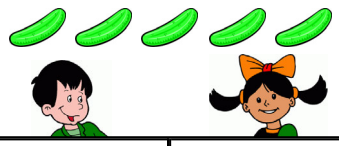
a. 1 + 5 = _____	**b.** 2 + 3 = _____	**c.** 4 + 2 = _____

5. Draw more boxes to illustrate the missing number and write it on the line.

a.  $2 + \_\_\_\_\_ = 6$	**b.**  $2 + \_\_\_\_\_ = 5$	**c.**  $4 + \_\_\_\_\_ = 6$
d.  $3 + \_\_\_\_\_ = 6$	**e.**  $1 + \_\_\_\_\_ = 6$	**f.**  $5 + \_\_\_\_\_ = 6$
g.  $1 + \_\_\_\_\_ = 5$	**h.** $0 + \_\_\_\_\_ = 6$	**i.**  $3 + \_\_\_\_\_ = 5$

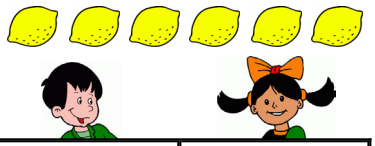
6. Larry and Emily share 5 cucumbers and 6 lemons in different ways. Find how many Emily gets. For the number shown, you can cover the cucumbers or lemons with your hand to see how many Emily gets.

a. 5



Larry gets:	Emily gets:
2	
1	
5	
3	
0	
4	

b. 6



Larry gets:	Emily gets:
1	
4	
5	
0	
2	
3	

7. Add.

$2 + 3 = \_\_\_\_\_$

$4 + 1 = \_\_\_\_\_$

$3 + 3 = \_\_\_\_\_$

$4 + 2 = \_\_\_\_\_$

$1 + 3 = \_\_\_\_\_$

$1 + 5 = \_\_\_\_\_$

$2 + 2 = \_\_\_\_\_$

$2 + 4 = \_\_\_\_\_$

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Chapter 2: Subtraction Within 0-10

Introduction

The second chapter covers the concept of subtraction, the relationship between addition and subtraction, and the various meanings of subtraction. Keep in mind that the specific lessons in the chapter can take several days to finish. They are not "daily lessons".

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

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

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

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

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

Then we continue studying the connection between addition and subtraction in the lesson *Two Subtractions from One Addition*. Writing two subtractions from one addition means for example writing both $8 - 3 = 5$ and $8 - 5 = 3$ from the addition $3 + 5 = 8$. This idea ties in with **fact families**, a concept that is coming up soon.

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

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

The following lesson *How Many More?* students solve problems of how many more or how many fewer objects one person has than the other by drawing the objects. You can also adapt this lesson to be done with manipulatives.

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

The Lessons in Chapter 2

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Kids' Subtraction Quiz from Mr. Martini's Classroom
Five problems to solve online. You can choose the highest number used from the list of numbers below the quiz.
http://www.thegreatmartinicompany.com/Math-Quick-Quiz/subtraction-kid-quiz.html

Subtraction Mystery Picture
Find out the picture behind the tiles by solving subtraction questions within 0-10.
http://www.dositey.com/addsub/Mystery4.htm

Matching Pictures to Number Sentences
Find the correct number sentence to go along with the picture.
http://www.haelmedia.com/html/mc_m1_001.html

Addition and Subtraction Game from The Little Animals Activity Centre
Solve simple addition and subtraction problems by clicking on the ladybug with the right answer.
http://www.bbc.co.uk/schools/laac/numbers/chi.shtml

Subtraction Game from Count Us In
Subtract two numbers which rolls a ball down a bowling alley lane.
http://www.abc.net.au/countusin/games/game8.htm

Take It Away
Subtract and click on the correct answer.
http://www.primarygames.com/takeaway/start.htm

Subtraction Pinball
When the ball hits numbers, it defines a problem. Next you choose the correct answer.
http://www.playkidsgames.com/games/pinball/subtraction/defaultk1.htm

Simple Subtraction
Help the duck fly faster by clicking on the cloud with the correct answer.
http://www.toonuniversity.com/flash.asp?err=513&engine=12

Save the Apples!
Click on the correct basket to get the monkey to carry the apple basket. A crocodile is waiting!
http://www.playkidsgames.com/games/apples/savetheApples.htm

Busy Bees
Figure out how many of the 10 bees went inside the hive.
http://www.hbschool.com/activity/busy_bees/index.html

Soccer Subtraction
Click to make the players disappear until the subtraction sentence is true.
http://www.ictgames.com/soccer_subtraction.html

Maths Carts
A downloadable racing game for young students to memorise addition and subtraction facts. Children 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 the penguins' igloos. See also my review at
http://www.homeschoolmath.net/reviews/tux_math.php
Price: Free
http://sourceforge.net/projects/tuxmath

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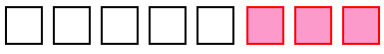
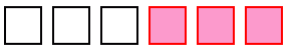
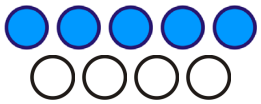
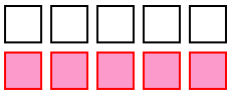
Subtraction and Addition in the Same Picture

How many coloured circles? How many white ones?  4 + 6 = 10	 3 + 4 = 7
Cover the coloured circles. Write a subtraction sentence.  10 – 4 = 6	Cover the coloured circles.  7 – 3 = 4

1. Make an addition sentence and a subtraction sentence from the same picture.

a.  _____ + _____ = _____ 7 – _____ = _____	**b.**  _____ + _____ = _____ 6 – _____ = _____
c.  _____ + _____ = _____ 5 – _____ = _____	**d.**  _____ + _____ = _____ 6 – _____ = _____
e.  _____ + _____ = _____ 8 – _____ = _____	**f.**  _____ + _____ = _____ 6 – _____ = _____

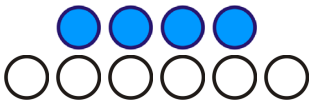
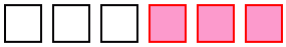
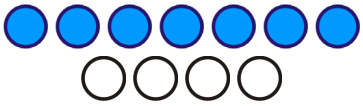
2. Make an addition sentence and a subtraction sentence for the same picture.

a.  _____ + _____ = _____ _____ – _____ = _____	**b.**  _____ + _____ = _____ _____ – _____ = _____
c.  _____ + _____ = _____ _____ – _____ = _____	**d.**  _____ + _____ = _____ _____ – _____ = _____

3. In each problem, draw circles and then colour them to fit the addition sentence. Then cover the **COLOURED** circles and make a subtraction sentence.

a. 7 + 1 = _____ _____ – _____ = _____	**b.** 6 + 3 = _____ _____ – _____ = _____
c. 2 + 3 = _____ _____ – _____ = _____	**d.** 2 + 5 = _____ _____ – _____ = _____
e. 7 + 4 = _____ _____ – _____ = _____	**f.** 3 + 3 = _____ _____ – _____ = _____

4. Cover the coloured objects, and write a subtraction sentence to fit the picture.

a.  _____ – _____ = _____	**b.**  _____ – _____ = _____
c.  _____ – _____ = _____	**d.**  _____ – _____ = _____
e.  _____ – _____ = _____	**f.**  _____ – _____ = _____
g.  _____ – _____ = _____	**h.**  _____ – _____ = _____

5. In each problem, draw some circles and colour some circles to fit the addition sentence. Then cover the **COLOURED** circles and make a subtraction sentence.

a. 9 + 1 = _____ _____ – _____ = _____	**b.** 7 + 2 = _____ _____ – _____ = _____
c. 10 + 4 = _____ _____ – _____ = _____	**d.** 10 + 2 = _____ _____ – _____ = _____

6. Draw circles to fit the subtraction sentence. Write an addition sentence, too.

a. 9 – 4 = _____ _____ + _____ = _____	**b.** 10 – 5 = _____ _____ + _____ = _____
c. 8 – 5 = _____ _____ + _____ = _____	**d.** 8 – 4 = _____ _____ + _____ = _____
e. 7 – 4 = _____ _____ + _____ = _____	**f.** 9 – 8 = _____ _____ + _____ = _____

Puzzle Corner

Subtract or add. Do not write the answers; just solve them in your head. Then compare, and write < , > or = .

3 ☐ 3 – 1	6 + 5 ☐ 6	10 ☐ 10 – 1
9 – 7 ☐ 8 – 7	6 – 4 ☐ 2 + 3	8 – 5 ☐ 5 + 3
5 + 2 ☐ 8 + 2	10 – 1 ☐ 10 – 3	7 – 4 ☐ 8 – 5
10 – 2 ☐ 8 – 2	10 + 0 ☐ 10 – 0	8 – 1 ☐ 8 + 1

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Two Parts — One Total

There are ten marbles. Some of them are blue and seven are yellow. How many are blue? You can write an addition sentence. You can ALSO write a subtraction sentence, even though nothing is taken away.	 _____ + 7 = 10 10 – 7 = _____ Cover part of the total (the yellow marbles), and you will see the other part (the blue marbles).
There are five blue marbles and some white marbles in a bag. There is a total of nine marbles. How many are white? Draw the marbles. Write an addition sentence AND a subtraction sentence.	_____ + _____ = _____ _____ – _____ = _____

1. Solve the word problems. Write an addition sentence AND a subtraction sentence.

a. Mother put some blue and some red flowers in a vase. Jen counted five red ones and a total of ten. How many of the flowers are blue?	_____ + _____ = _____ _____ – _____ = _____
b. There are nine children on a team, and four of them are boys. How many are girls?	_____ + _____ = _____ _____ – _____ = _____

c. John has ten socks in his basket. Eight of them are white, and the rest are black. How many are black?

_____ + _____ = _____

_____ − _____ = _____

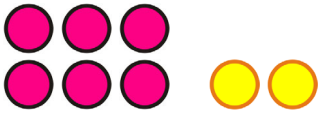
d. Gloria saw eight chairs on the lawn, and two had blown over. How many were still standing upright?

_____ + _____ = _____

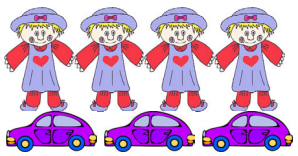
_____ − _____ = _____

2. For each picture, make a word problem that is solved by subtraction.

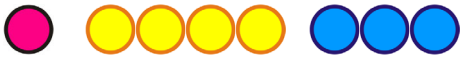
a.



b.



3. Write an addition sentence for the pictures.

 **a.** _____ + _____ + _____ = _____	 **b.** _____ + _____ + _____ = _____
 **c.** _____ + _____ + _____ = _____	 **d.** _____ + _____ + _____ = _____

4. Draw the missing marbles to match the addition sentence.

 **a.** 3 + 2 + _____ = 8	 **b.** 1 + 5 + _____ = 10

5. Draw a picture to solve these problems.

a. Tanya had some red, some blue, and some yellow roses in a vase. Two of the roses were blue, and two were red. If she had a total of ten roses, how many of them were yellow?

b. Seven birds sat in a tree. One of them was black, two were blue, and the rest were brown. How many were brown?

c. Bonnie has two long pencils and two medium-sized ones. The rest of her pencils are short If she owns nine pencils in all, how many of her pencils are short?

Fact Families

Two addition facts and two subtraction facts form a fact family if they use the same three numbers.

For example, from 5, 3, and 2 we get the fact family on the right:

5

$2 + 3 = 5$ $\quad 5 - 3 = 2$

$3 + 2 = 5$ $\quad 5 - 2 = 3$

1. Write the fact families that match the pictures.

a. 6

$1 + 5 = 6$

$5 + 1 = 6$

$6 - \_\_\_\_\_ = \_\_\_\_\_$

$6 - \_\_\_\_\_ = \_\_\_\_\_$

b. 8

$\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_$

c. 9

$\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_$

d. 10

$\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ + \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_$

$\_\_\_\_\_ - \_\_\_\_\_ = \_\_\_\_\_$

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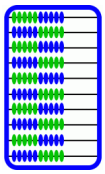
Chapter 3: Place Value Within 0-100
Introduction

In the third chapter of *Math Mammoth Grade 1*, students learn numbers up to 120. Students compare whole numbers to 100 and learn to think of whole numbers between 10 and 100 in terms of tens and ones.



The 100-bead abacus, or school abacus, simply has 10 beads on each of 10 rods for a total of 100. It is not the place-value abacus used by the Chinese or the Japanese. On the school abacus, each bead simply represents one. It can look, for example, like the picture on the right. The 100-bead abacus lets children both "see" the numbers and use their touch while making them.

There are many kinds of abacus available through Amazon.com. For example, this Melissa & Doug Classic Wooden Abacus:
http://www.amazon.com/exec/obidos/ASIN/B00005BVRQ/?tag=mathmammoth

You can browse Amazon's abacus collection at this link:
http://www.amazon.com/s/?field-keywords=abacus&tag=mathmammoth

You can obtain an abacus from other shops as well. Even if you cannot get a real one, you can use this on-line virtual abacus instead:
http://illuminations.nctm.org/Activity.aspx?id=4131

The abacus is not the only model used in the chapter. We also use a visual model of blocks where ten of them "snap" together to form a stick. If you already have so-called base-ten blocks, you can use them along with the visual exercises, if you want to.

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

When children count, they basically just learn numbers as a kind of continuum that continues and goes on without end. With simple counting, your child might not catch on to the inherent structure and how it goes into groups of tens and hundreds and thousands.

For children to understand place value, they first need to know their numbers up to 10, to be able to do simple addition with small numbers, and to understand about counting in groups. Our whole number system is based on the idea that if you have lots and lots of objects, the efficient way is to count them in groups of tens, hundreds, and thousands — not individually.

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

There is nothing inherently necessary about our system of numerical place value. In fact it would be possible to develop a different system of writing numbers where font size would indicate the size of the group: For example, 78_2 (or $7_2 8$ or $_2 78$) would represent 8 hundreds, 7 tens, and 2 ones, or 872 in the place-value system. (Please note that the text does NOT present this concept to the student. It is just mentioned here as an example to point out that the concept of place value, which we as adults take for granted, is an abstraction that is not intuitively obvious.)

This chapter introduces the child to the concept of place value in a minimal way by presenting just two digits.

The Lessons

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Base Blocks from the National Library of Virtual Manipulatives
Place enough ten-sticks and one-blocks into the work area to show given numbers. Choose "Columns = 2" to restrict the program to two-digit numbers.
http://nlvm.usu.edu/en/nav/frames_asid_152_g_1_t_1.html?from=category_g_1_t_1.html

Electronic Abacus
Use this to illustrate 2-digit numbers. It shows the amount of beads with a number and with a format "2-ten 5".
http://illuminations.nctm.org/ActivityDetail.aspx?ID=8

Shark Pool Place Value
Click on the number shown by the ten-stacks and individual blocks.
http://www.ictgames.com/sharknumbers.html

Give the Dog a Bone
Find the hidden bones on a 100-chart.
http://www.oswego.org/ocsd-web/games/DogBone/gamebone.html

Number Charts
Create different kinds of printable number charts.
http://www.homeschoolmath.net/worksheets/number-charts.php

Base 10
Build the given number using ten-sticks and blocks.
http://www.learningbox.com/Base10/BaseTen.html

Techno Tortoise
Move the tortoise in steps of 10s, 5s, and 1s on the number line to the target number.
http://www.ictgames.com/technowithflock.html

Number Line
Useful for illustrating two-digit numbers. Draw leaps and click on the line to reveal number tags. Change lines to get to two-digit numbers and more.
http://www.ictgames.com/numberLine.html

Connect the Dots
Connect the dots by counting by twos.
http://www.abcya.com/connect_the_dots_bear_2s.htm

Octopus Game
Find the shell that contains a number 10 more than the given number.
http://www.ictgames.com/octopus.html

Froggy Hop
Find 10 more or 1 more than a given number.
http://www.ictgames.com/frog.html

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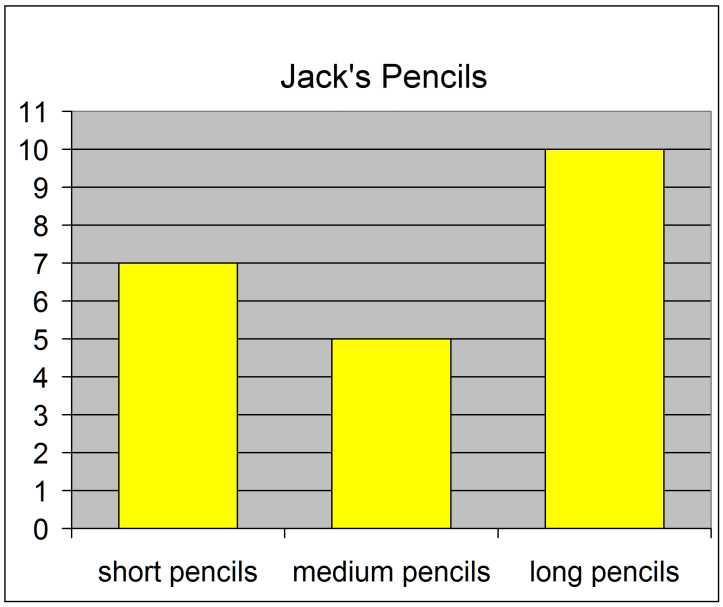
Bar Graphs

This is a **bar graph**. Read it this way: look at the TOP of each column (bar), and look towards the left. How high does the top of the bar reach? Read the number.

Look at the first bar, for short pencils. Where does the top of that bar reach?

It reaches to 7. So, Jack has 7 short pencils.



1. **a.** How many medium pencils does Jack have?

   b. How many long pencils does Jack have?

   c. How many short and medium pencils does Jack have in total?

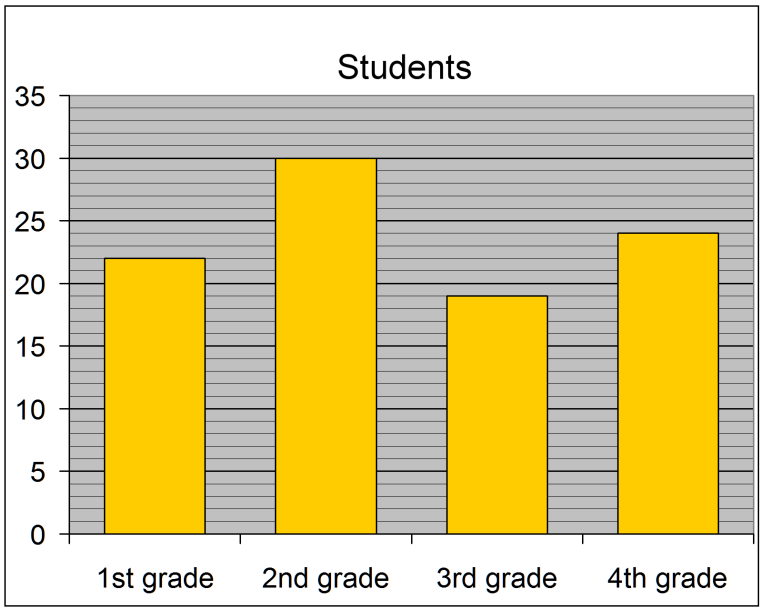
   d. How many more long pencils does he have than short ones?

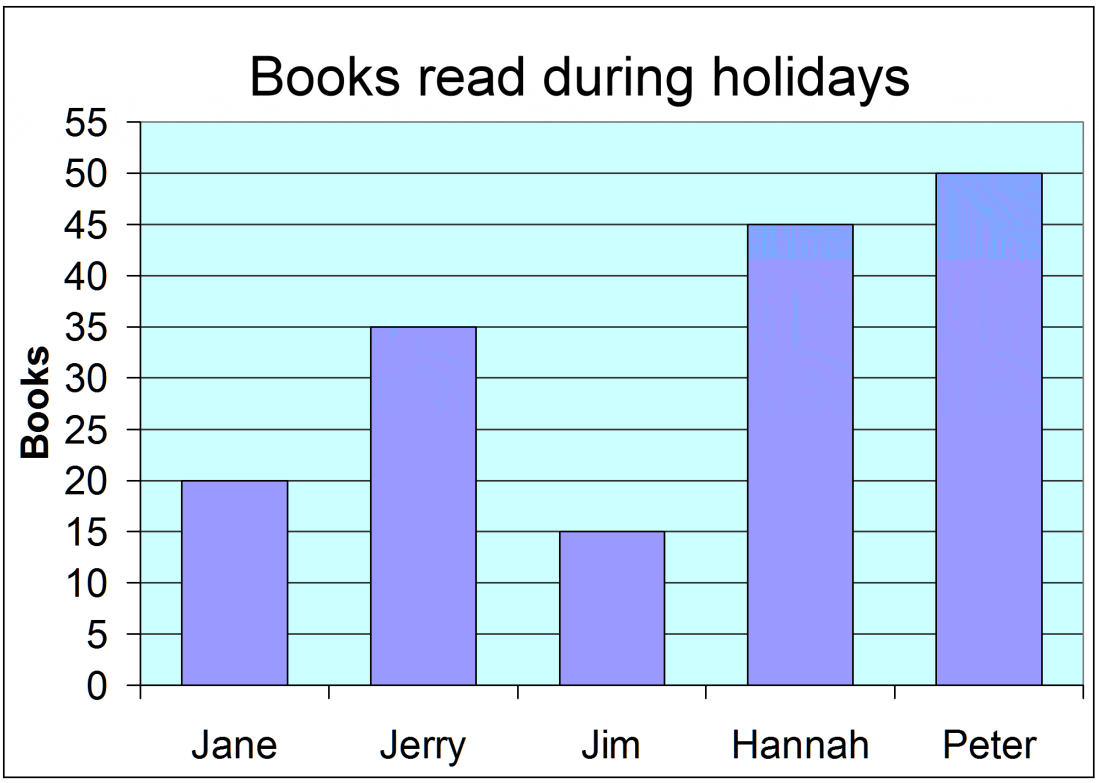
2. Here, the bar for first grade students reaches two little lines past 20. That's 22 students.

   a. How many students are in 2nd grade?

   b. How many students are in 3rd grade?

   c. How many students are in 4th grade?





3. **a.** How many books did each child read?

Jane _____ Jerry _____ Jim _____ Hannah _____ Peter _____

b. _____ read the fewest books.

_____ read the most books.

c. The two children who read the most books were _____

and _____.

The two children who read the fewest books were _____

and _____.

d. How many books did Jane and Peter read in total? _____ books

(Challenge) How many total books did Jim and Hannah read? _____ books

Tally Marks

1. **Tally marks.** Tally marks are counting marks. When people count they make one tally mark for each thing they count. For one item or thing, draw one tally mark as " | ". The fifth tally mark is drawn across the four others like " 𝍸 ".

   Write the number that matches the tally.

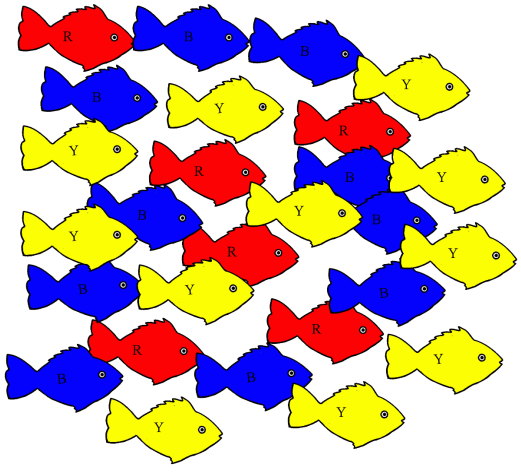
𝍸 |	𝍸 𝍸 | |	𝍸 𝍸 𝍸 | | | |	𝍸 𝍸 𝍸 𝍸 | | |
a. _____	**b.** _____	**c.** _____	**d.** _____

2. Draw tally marks for these numbers.

a. 7	**b.** 14
c. 16	**d.** 32
e. 41	**f.** 28

3. Count the fish. Use tally marks to keep track. Mark each fish you count and make a tally mark for it. That way you will not count the same fish twice. Then write the number under "Count".

	Tally Marks	Count
Red		
Blue		
Yellow		



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math MAMMOTH

Grade 1-B Worktext International Version

Addition and subtraction facts within 0 - 10

Clock and calendar

Shapes and measuring

Adding and subtracting within 0 - 100

Counting coins

Light Blue Series

By Maria Miller

Contents

Chapter 7: Addition & Subtraction within 0-100 and Graphs

Chapter 8: Coins

Foreword

Math Mammoth International Version Grade 1-A and *Grade 1-B* worktexts comprise a complete maths curriculum for first grade mathematics studies.

This curriculum is essentially the same as the version of Math Mammoth Grade 1 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 first grade standards in your country. However, you can probably find material for any missing topics in neighbouring grades. For example, let's say that your country mandates the study of multiplication tables in grade (year) 4. That material is not found in Math Mammoth Grade 4, but it does appear in Math Mammoth Grade 3-A. So, you can simply re-order the material to solve most incompatibilities between different standards.

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.
- The paper size is A4.

The four main areas of study for first grade are:

1. Learning the concepts of addition and subtraction, and strategies for remembering addition and subtraction facts (chapters 1-2 and chapter 4);

2. Developing understanding of whole number relationships and place value up to 100 (chapter 3 and chapter 7);

3. Developing the concept that measuring is a process of iterating basic units of length or some other measure (chapter 6); and

4. Reasoning about attributes of geometric shapes, such as the number of sides and the number of corners, and composing and decomposing geometric shapes (chapter 6).

Additional topics we study in the first grade are telling time to the half hour (chapter 5) and counting coins (chapter 8).

The portion of first grade included in this book, Part B, covers strategies for addition and subtraction facts (chapters 4), telling time and reading the calendar (chapter 5), shapes and measuring (chapter 6), adding and subtracting two-digit numbers and reading pictographs (chapter 7), and counting coins (chapter 8).

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 the child's studies. While the 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. After a bit of a break and a fresh approach, the chances are good that the student will be able to get past the concept that he or she got stuck on before.

The Math Mammoth program concentrates on a few major topics at a time, in order to study them in depth, while at the same time including revision problems from past topics. 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.

This does not mean that your child will not need an occasional extra revision. Indeed, when each major topic is presented in its own chapter, this gives you more freedom to plan the course of study yourself to set appropriate times for revision. In fact, I encourage you to plan your mathematics school year in terms of the topics covered, instead of in terms of a certain range of pages from a book.

In order to realize any needed extra revision, the download version includes an html page called *Make_extra_worksheets_grade1.htm* that you can use to make additional worksheets for computation or for number charts. You can also reprint some previously studied pages. Chapter Four contains a lot of pages with problems that practise addition and subtraction facts, so you might choose to "save" some of these as an "extra worksheets file," which makes them available to use for later revision.

I wish you success in teaching maths!

Maria Miller, the author

Chapter 4: Addition and Subtraction Facts
Introduction

This chapter provides lots of practice for learning and memorising the basic addition and subtraction facts with numbers from 0 to 10. The Common Core Standards call for students to demonstrate fluency in addition and subtraction with numbers up to 10 in the first grade, and this is what this chapter is for.

Since this chapter is somewhat repetitive, consider studying this chapter simultaneously with some other chapter, such as clock or shapes and measuring. For example, you could study some shapes and measuring and some from this chapter each day, or study the two different chapters on alternate days. This is not mandatory; it is just a suggestion to "mix things up" in a somewhat spiral fashion to avoid students getting bored with all the repetition.

The series of lessons entitled *Addition and Subtraction Facts With...* aim to help the student to memorise the basic addition facts for numbers from 0 to 10. We approach it from the concept of "fact families," which makes the process logical and structured. These lessons have a lot of repetition and practice for both subtraction and addition facts.

Some students may not need all of the practice. Use your judgment and skip some pages in this section if you feel it is necessary. You can also "save" some of the pages to be completed later, as a revision.

Alongside this book, you can also use maths games or flashcards to reinforce these facts. You will find a list of some free online games below.

While your child does not absolutely have to learn these facts by heart while studying this chapter, it is advisable to learn them fairly well here. Mathematics builds upon previously learned concepts and facts, and learning addition and subtraction facts is essential for later study, such as when students add 24 + 2 (in chapter 7 of this curriculum). However, if the child has not memorised these facts before the end of the chapter, don't worry. Go on with the curriculum, but keep practising the facts on the side with games, worksheets, drills, *etc.*, until the student has mastered them.

Besides practising the facts of addition and subtraction with the help of fact families, the student will also solve word problems, fill in number patterns, get used to a symbol, such as △, that represents an unknown number, compare expressions (such as $5 - 2 < 2 + 5$), and subtract more than one number at a time.

The Lessons

Games for Addition and Subtraction Facts

10 Out (or *5 Out* or *6 Out etc.)*

You need: lots of number cards with numbers 1-10. (Regular playing cards with the face cards removed will work.)

Rules: Deal seven cards to each player. Place the rest in a pile in the middle, face down.

At the beginning of her turn, a player may optionally take the top card from the pile. Then the player may optionally ask the player on her right for one card (like in "Go Fish": "Do you have a seven?"), and the player on the right must give it to her if he has it. Then the player whose turn it is may discard either: (a) a single "10" card by itself or (b) any *two* cards in her hand that add up to 10.

The winner is the player who first discards all cards from his hand.

Variations:
* Deal more than seven cards.
* Deal fewer cards if there are a lot of players or if the players are very young.
* Also allow players to discard a set of *three* cards that add up to 10.
* Instead of 10, players discard cards that add up to 9, 8, 11, or some other number.
* Use the face cards for 11, 12, and 13.

Some Went Hiding

You need: An amount of small objects that is equal to the sum you are studying. For example, to study the sums with 12, you need 12 marbles, 12 blocks, or 12 of something else.

Rules: The first player shows the objects, then quickly hides SOME behind his back without showing how many. Then he shows the remaining objects to the next player to his right, who has to say how many "went hiding." If that player gives the right answer, then it becomes his turn to hide some and ask the next player to answer. If he gives the wrong answer, then he misses his turn, and the next player shows and hides the objects. This game appeals best to younger students.

Variation:
* Instead of getting a turn, the player may gain points or other rewards for the right answer.

Addition (or Subtraction) Battle

You need: A standard deck of playing cards from which you remove the face cards, and perhaps also some of the other higher number cards such as tens, nines, and eights. Alternatively, a set of dominoes works well for students who do not yet know their numbers beyond 12.

Rules: At the beginning of each round, each player receives two cards face up and calculates their sum (adds). The player with the highest sum gets all the cards from the other players. Once there are no longer enough cards left in the pack to deal two cards to each player, players count their cards, and the player with the most cards wins.

If there is a tie, such as two players both having the sum of 11, those players get an additional two cards and "battle" with those to resolve the tie.

Variations:
* This game is easily adapted for subtraction and fractions.
* You can also use dominoes instead of playing cards.

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Mental Maths Practice
Online practice of sets of 10 addition and subtraction questions; timed.
http://www.teachingtreasures.com.au/maths/mental-maths/yr1-maths-pg1.htm

Maths Facts Practice at playKidsgames.com
Timed practice with various skill levels.
http://www.playkidsgames.com/games/mathfact/default.htm

Number Bond Machines
Practise which two numbers add up to a given number.
http://www.amblesideprimary.com/ambleweb/mentalmaths/numberbond.html

Addition Eaters and **Subtraction Eaters**
Eat the addition (or subtraction) problems if the sum (difference) is a given number.
http://www.hoodamath.com/games/addition.php
http://www.hoodamath.com/games/subtraction.php

Sum Stacker
Drag dice from stack to stack until the sums of each stack equal the sums given.
http://www.carstensstudios.com/mathdoodles/sumsstacker.html

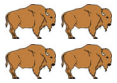
Fun maths card game
A simple and fun card game for addition and subtraction.
http://blog.aussiepumpkinpatch.com/2010/03/meal-ticket-math.html

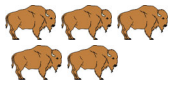
Face off! and other card and board games
Students place markers on the numbers 2-12, toss two dice, find the sum and remove a marker from that number. The page has other addition games also.
http://www.mathwire.com/games/addsubgames.html

Number Line Bounce
Arrange the given bounce arrows on a number line using addition and subtraction until you reach the target number. Since it uses several operations, it *is challenging* for first graders, but give it a try.
http://nlvm.usu.edu/en/nav/frames_asid_107_g_1_t_1.html

Tux Math
A versatile arcade game for maths facts with many options. Includes all operations. You need to shoot falling comets that can damage the penguins' igloos. **Price:** Free.
http://sourceforge.net/projects/tuxmath
See also my review: **http://www.homeschoolmath.net/reviews/tux_math.php**

Addition and Subtraction Facts with 4 and 5

Facts with 4		4 + 0 = 4 0 + 4 = 4	4 – 4 = 0 4 – 0 = 4
		1 + 3 = 4 3 + 1 = 4	4 – 3 = 1 4 – 1 = 3
		2 + 2 = 4	4 – 2 = 2

Facts with 5		5 + 0 = 5 ____ + ____ = 5	5 – 5 = 0 5 – ____ = ____
		4 + 1 = 5 1 + 4 = 5	5 – 4 = ____ 5 – ____ = ____
		3 + 2 = 5 ____ + ____ = 5	5 – 3 = ____ 5 – ____ = ____

1. Find the missing numbers.

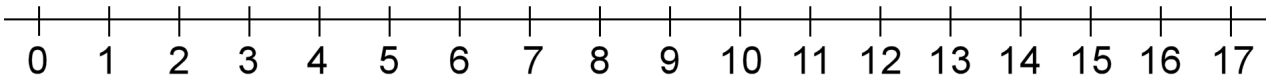
a.	b.	c.	d.
3 + _____ = 4	2 + _____ = 5	5 – 0 = _____	4 – 0 = _____
1 + _____ = 4	1 + _____ = 5	5 – 4 = _____	4 – 3 = _____
1 + _____ = 5	4 + _____ = 5	5 – 2 = _____	5 – 1 = _____
2 + _____ = 4	3 + _____ = 5	4 – 1 = _____	4 – 2 = _____

2. Colour the square:

- yellow if the answer is 0
- red if the answer is 1
- blue if the answer is 2
- green if the answer is 3
- purple if the answer is 4
- orange if the answer is 5

5 – 4	2 + 3	4 – 4	1 + 2	4 – 2	1 + 3
2 + 2	3 – 2	5 – 0	0 + 0	5 – 2	1 + 1
0 + 2	5 – 1	0 + 1	1 + 4	0 – 0	4 – 1

3. Continue the patterns until the boxes are full.



a.

17 – 0 = _____

17 – 1 = _____

17 – 2 = _____

17 – ____ = _____

17 – ____ = _____

_____ – ____ = _____

_____ – ____ = _____

b.

10 + ____ = 10

10 + ____ = 11

10 + ____ = 12

10 + ____ = ____

____ + ____ = ____

____ + ____ = ____

____ + ____ = ____

c.

5 – 2 = _____

6 – 2 = _____

7 – 2 = _____

_____ – 2 = _____

_____ – ____ = _____

_____ – ____ = _____

_____ – ____ = _____

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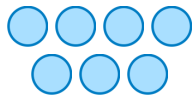
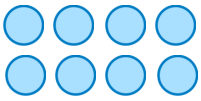
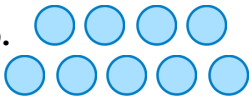
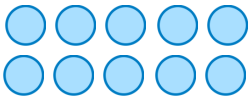
Subtracting More Than One Number



7 – 1 – 2 = ?

You have 7 circles. First you take away 1 circle, and then you take away 2 more circles. You will have 4 circles left. 7 – 1 – 2 = 4.

1. Subtract twice, taking away circles. You can cover or cross out the circles to help.

a. 	b. 	c. 
8 – 2 – 3 = _____	9 – 3 – 1 = _____	10 – 5 – 3 = _____
8 – 5 – 2 = _____	9 – 4 – 2 = _____	10 – 6 – 2 = _____
8 – 1 – 3 = _____	9 – 2 – 5 = _____	10 – 1 – 4 = _____

2. Solve. You can draw pictures to help.

a. Mary had ten cookies. She gave two to her brother and two to her sister. How many does she have left?

b. Seven birds were in the tree. Three flew away. After a while, one more flew away. How many birds were left in the tree?

c. Eight cars were in the parking lot. Then three cars left. After that two more cars left. How many cars are there now?

d. Jack had $5. His mother gave him $1, and his father gave him $2. How many dollars does Jack have now?

You can subtract two numbers one at a time:	OR you can subtract their total:
8 – 2 – 3 \ / 6 – 3 = 3 First take away 2. That leaves 6. Then, from 6, subtract 3. That leaves 3.	8 – 2 – 3 \ / 8 – 5 = 3 Check how much you need to subtract or take away *in total*. You need to subtract 2 and 3, or a total of 5. So, subtract 8 – 5 = 3.

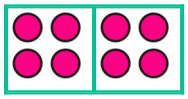
3. Subtract by either method.

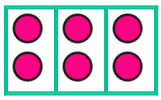
a.	b.	c.
7 – 2 – 3 = _____	9 – 7 – 1 = _____	7 – 5 – 1 = _____
9 – 2 – 6 = _____	6 – 2 – 2 = _____	10 – 6 – 1 = _____

4. Solve. Compare the two problems and their results.

a.	b.	c.
10 – 3 – 2 = _____	7 – 3 – 3 = _____	9 – 6 – 1 = _____
10 – 3 – 3 = _____	7 – 4 – 3 = _____	8 – 6 – 1 = _____

5. Match the subtraction problems to the correct pictures.



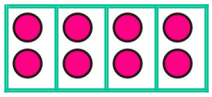


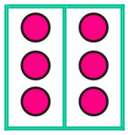
a. 8 – 2 – 2 – 2 – 2 = 0

b. 8 – 4 – 4 = 0

c. 6 – 2 – 2 – 2 = 0

d. 6 – 3 – 3 = 0





Puzzle Corner Here are some problems with four numbers!

9 – 3 – 2 – 1 = _____ 10 – 1 – 2 – 1 = _____ 8 – 4 – 1 – 2 = _____

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Chapter 5: Time
Introduction

This fifth chapter covers reading the clock to whole hours and half hours and some basics of time and the calendar.

Reading the clock to whole and to half hours

The main goal of this chapter is to learn the whole and half hours on the clock.

In the first lesson we use an analogue clock without a minute hand. The child learns to tell whole and half hours with this special clock and also practises saying what time is one hour or a half-hour later than a given time.

The next lesson talks about minutes. While it does have some clock reading to the nearest five minutes, the main focus in this lesson is to learn that one hour is 60 minutes, that a half-hour is 30 minutes, and how the phrases "o'clock" and "half past" relate to the hours and minutes.

For example, the child is to learn that "half past eight" is written 8:30, and the "30" part is the number of minutes, so half an hour is just 30 minutes.

The book has a few exercises about reading the clock to five-minute intervals, however these can be skipped. The student will get a lot of practice reading the clock to the nearest five minutes in the second grade book.

I have included one lesson about time order. The topics in this lesson are hopefully already familiar to the student. The next lesson deals with morning and afternoon hours: AM and PM. The goal is for the student to understand that the clock starts at 12 midnight, goes through all the A.M. hours from 1 to 12 until it is 12 noon, and then goes through all of the P.M. hours from 1 to 12 until it is 12 midnight again.

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

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

The Lessons

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Flashcard Clock
Read the analogue clock and type in the time in digital format. Very clear clock and good fast response!
http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard_clock.htm

Teaching Time
Analogue and digital clock games and worksheets. Also has an interactive "class clock" to demonstrate time.
http://www.teachingtime.co.uk/

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

Clockwise
Enter a time, and the clock will run until it reaches it, or the clock runs to a time, and you type it in.
http://www.shodor.org/interactivate/activities/clock2/index.html

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

Time-for-Time
Resource site to learn about time: worksheets, games, quizzes, time zones.
http://www.time-for-time.com/default.htm

That Quiz: Time
Online quizzes for all time-related topics: reading the clock, calculating the time that has passed, adding or subtracting time, converting time units, and changing time zones. The quizzes have many levels, can be timed or not, and include lots of options for customisation. Easy to use and set up.
www.thatquiz.org/tq-g/math/time

On Time
Set the clock's hands to the given time. Four different levels.
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 or digital). Three different levels: whole hours, half hours, or quarter hours.
http://www.sheppardsoftware.com/mathgames/earlymath/clock_shoot.htm

Calendar Song
This girl sings the months of the year with gestures.
http://www.youtube.com/watch?v=IwdQegySW-0

Calendar Quiz
Click on the correct date on the calendar to answer questions such as, "What is the first Monday of this month?"
http://www.softschools.com/math/calendar/activities/calendar_game/

Create Your Own Calendar
Choose a month and a year, then add your own text to each day and generate the calendar.
http://www.janbrett.com/calendar/calendar1.php4

Months Game
Help Tom the Zebra get ready for bed by clicking and dragging the months into the correct order.
http://www.roythezebra.com/reading-games/high-frequency-words-months.html

Days of the Week Game
Help Tom the Zebra get ready for bed by clicking and dragging the days of the week into the correct order.
http://www.roythezebra.com/reading-games/high-frequency-words-days.html

It's a Date
An online quiz about dates on a calendar.
http://www.beaconlearningcenter.com/WebLessons/ItsADate/default.htm

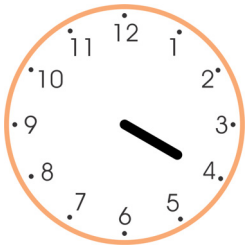
12 Months of the Year
Drag the months into the correct order and help the monkeys get a banana.
http://www.abcya.com/months_of_the_year.htm

Monkey Fun Game
Practice months of the year and ordinal numbers with this interactive game**.**
http://www.eslgamesplus.com/months-and-ordinal-numbers-esl-vocabulary-game-activity-online/

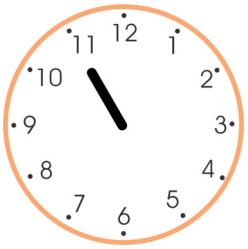
Memory Game
For the days of the week.
http://www.eslgamesplus.com/days-of-the-week-esl-vocabulary-game/

Whole and Half Hours

In this lesson, the clock only has one hand - the HOUR hand.



The hour hand points to four -
it is four hours, or “four o’clock”.

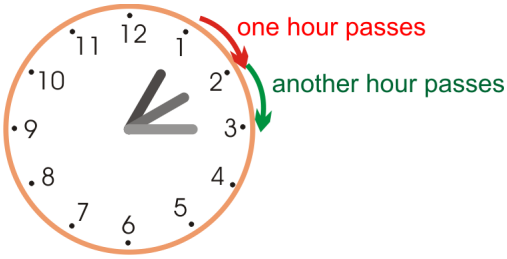


The hour hand points to eleven -
it is eleven hours, or “eleven o’clock”.

The hour hand moves slowly around the clock face: from 1 to 2 to 3, and so on.

When the hour hand moves from 1 to 2, exactly one hour of time has passed.

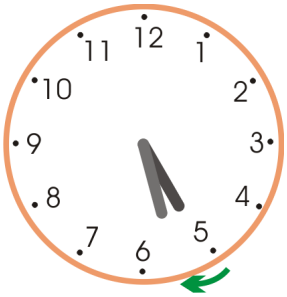
The same is true when the hour hand moves from 2 to 3. It takes the hour-hand one hour to do that.



On this clock, the hour hand pointed to 5 when it was five o’clock.

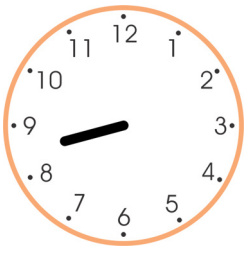
Then it moved to **halfway** between 5 and 6.
We say it is **half past five**.

It takes the hour hand one-half hour to move from five to halfway between five and six.

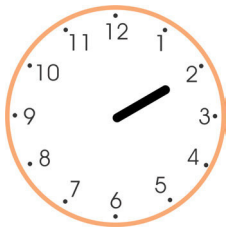
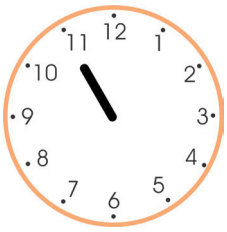
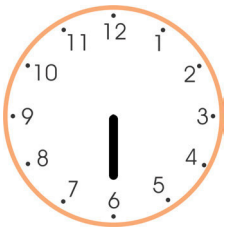
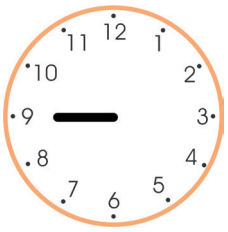


Here the hour hand has moved past eight o’clock, and is halfway
between 8 and 9. We say it is half past eight.

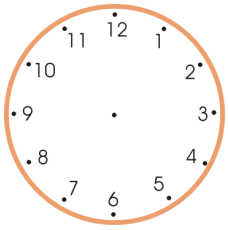
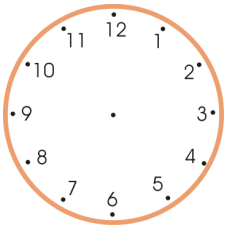
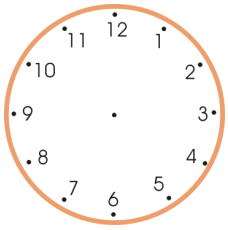
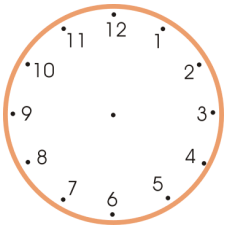
In half an hour it will be nine o’clock.



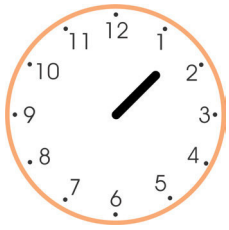
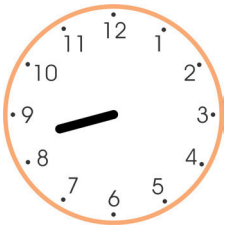
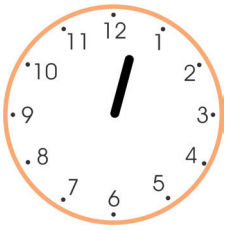
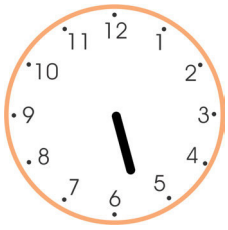
1. Write the time under each clock face.

			
a. _____ o'clock	**b.** _____ o'clock	**c.** _____ o'clock	**d.** _____ o'clock

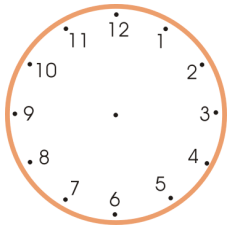
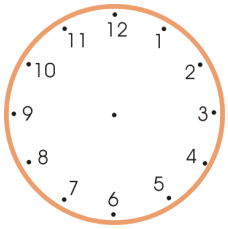
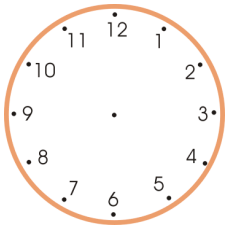
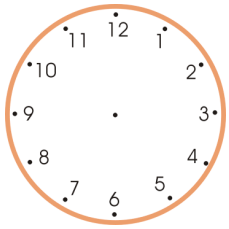
2. Draw the hour hand.

			
a. Five o'clock	**b.** Eight o'clock	**c.** Twelve o'clock	**d.** Seven o'clock

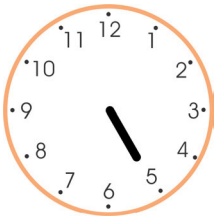
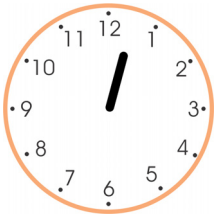
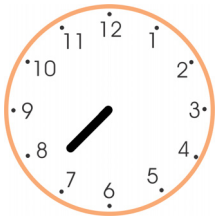
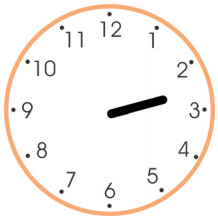
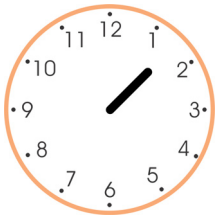
3. Write the time.

			
a. Half past _____	**b.** Half past _____	**c.** Half past _____	**d.** Half past _____

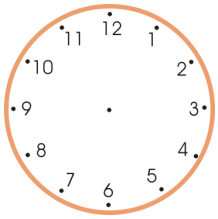
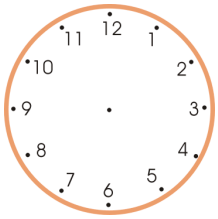
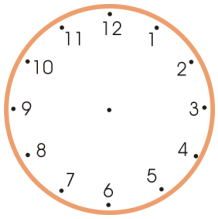
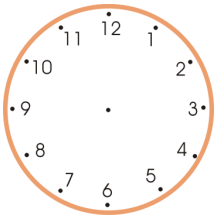
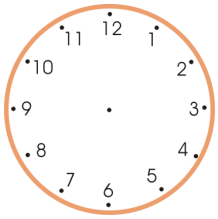
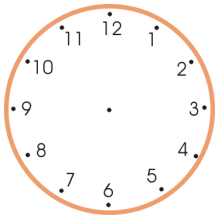
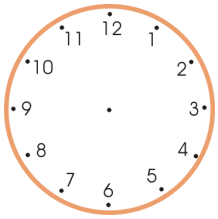
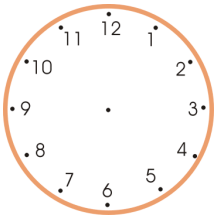
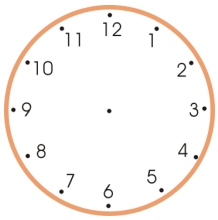
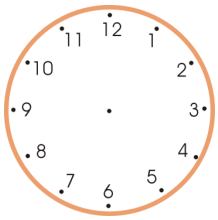
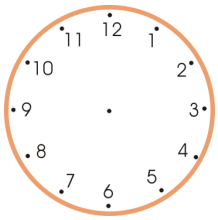
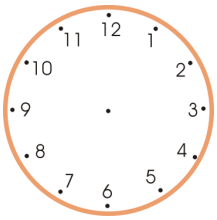
4. Draw the hour hand.

			
a. Half past six	**b.** Half past three	**c.** Half past two	**d.** Half past four

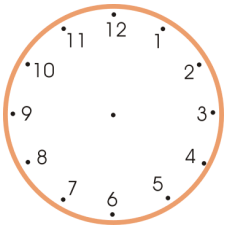
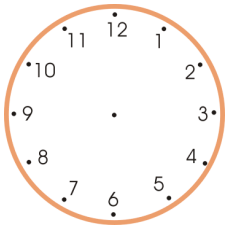
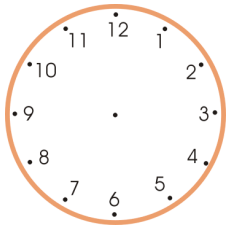
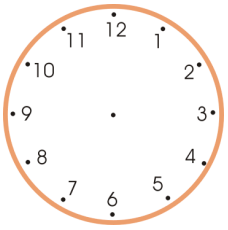
5. Write the time!

a. 	**b.** 	**c.** 	**d.** 
e. 	**f.** 	**g.** 	**h.** 

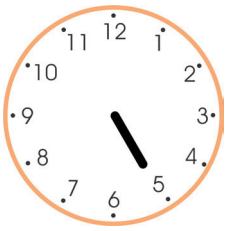
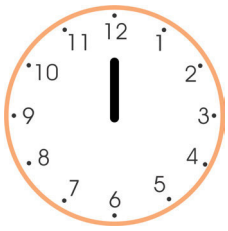
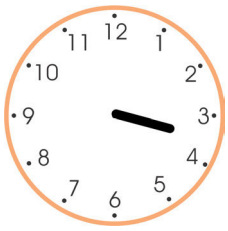
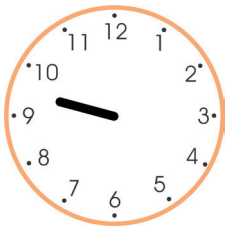
6. Draw an hour hand on each clock. In the second row, show the time a half-hour later. In the third row, show the time another half-hour later (than the clock in the second row).

Draw the hour hand.	 **a.** Five o'clock	 **b.** One o'clock	 **c.** Half-past six	 **d.** Half-past three
A half-hour later →				
Another half-hour later →				

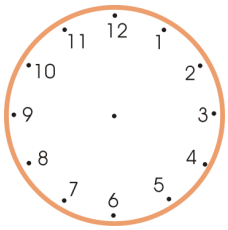
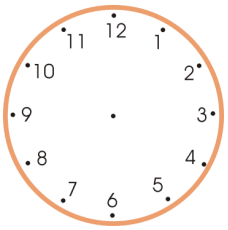
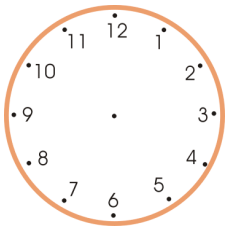
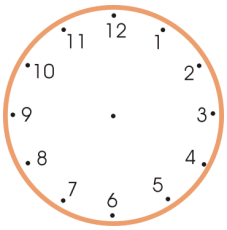
7. Draw the hour hand on each clock. Then write the time that the clock will show a half-hour later.

				
1/2 hour later →	**a.** Three o'clock	**b.** Eleven o'clock	**c.** Half-past five	**d.** Half-past eleven
	half past _____	half past _____	_____ o'clock	_____ o'clock

8. Write the time that the clock shows. Then write what the time will be an hour later.

				
An hour later →	**a.** _____ o'clock	**b.** _____ o'clock	**c.** Half past _____	**d.** Half past _____
	_____ _____	_____ _____	_____ _____	_____ _____

9. Draw the hour hand on the clock face. Write what it will be an hour later.

				
An hour later →	**a.** Three o'clock	**b.** Eleven o'clock	**c.** Half-past five	**d.** Half-past eleven
	_____ _____	_____ _____	_____ _____	_____ _____

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Chapter 6: Shapes and Measuring
Introduction

This sixth chapter of *Math Mammoth Grade 1* covers basic shapes and the concept of measuring. We will also study halves and quarters, centimetres, and three-dimensional shapes.

If you have the electronic version of this book (a PDF file), you will need to print the file at 100% instead of using "shrink to fit," "print to fit," or similar options. If you print using "shrink to fit," some exercises about measuring in centimetres will not come out right but will be "shrunk" compared to reality.

The goals of this section are:

- The student can identify common shapes, such as triangles, squares, rectangles, circles, and quadrilaterals.
- The student can draw lines with a ruler.
- The student understands that measuring length is a process of iterating (repeating) the unit of measure.

These are fairly simple goals, and the lessons in this chapter can be quite easy, but they are preparing the student for later studies. For example, dividing shapes into parts not only makes the student more familiar with the properties of the original shape and its parts, but also helps to build an understanding of the relationships of parts to a whole for the later study of fractions. These concepts seem easy to us, and even to your child, but they are necessary to lay a proper foundation for geometric understanding.

For additional practice, students can draw lines and other shapes however they are able to, divide them into other shapes, and draw patterns on grid paper. A tangram or a set of plastic shapes are also excellent aids.

The Lessons

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Buzzing with Shapes
Tic tac toe with shapes; drag the counter to the shape that has the right number of sides.
http://www.harcourtschool.com/activity/buzz/buzz.html

Patch Tool
An online activity where the student designs a pattern using geometric shapes.
http://illuminations.nctm.org/ActivityDetail.aspx?ID=27

Shape Cutter
Draw any polygon of any shape, cut it up, and manipulate the cut pieces. You can even have the computer mix up the pieces, so you can then try to recreate the original shape.
http://illuminations.nctm.org/ActivityDetail.aspx?ID=72

Shifting Shapes
Figure out what the shape is by viewing parts of it 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

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
Identify common two-dimensional shapes in this multiple-choice online quiz. You can modify the quiz parameters to your liking.
www.thatquiz.org/tq-f/math/shapes/

Tangram puzzles for kids
Solve the puzzle by moving and rotating the seven pieces of the Tangram to form the given shape.
http://www.abcya.com/tangrams.htm

Logic Tangram game
Note: This game uses only a four-piece "Tangram". 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

Online Kaleidoscope
Design your own virtual kaleidoscope with this interactive tool.
http://www.zefrank.com/dtoy_vs_byokal/

Measure It!
Click on the ruler to measure a red bar.
http://www.funbrain.com/measure/index.html

Elementary Teddy Bear Measurement Game
Measure the teddy bear with the ruler.
http://www.apples4theteacher.com/measure.html

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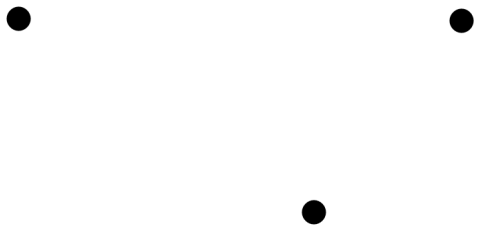
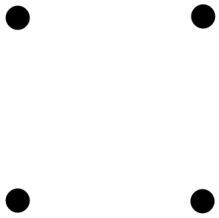
Drawing Basic Shapes

1. Use a ruler to join the dots carefully with straight lines. What shape do you get?



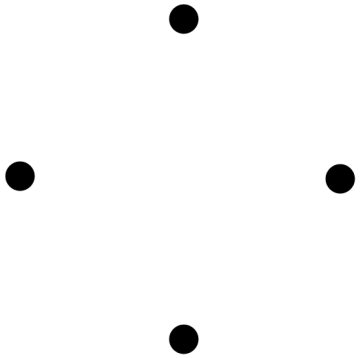
a. triangle / square / rectangle / other four-sided shape



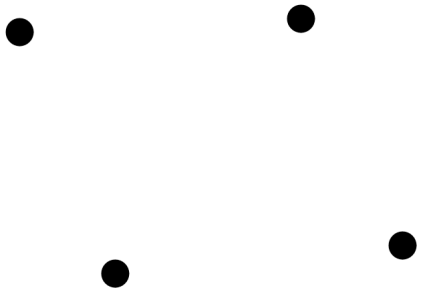
b. triangle / square / rectangle / other four-sided shape

c. triangle / square / rectangle / other four-sided shape

d. triangle / square / rectangle / other four-sided shape



e. triangle / square / rectangle / other four-sided shape



f. triangle / square / rectangle / other four-sided shape

2. **a.** Draw four dots anywhere in this space.

Join the dots with lines. Use a ruler!

What shape did you get? A square, a rectangle, or just a four-sided shape?

b. In this space try to draw four dots in this space so that you get a rectangle.

c. Draw a rectangle. This time, try using a book to make the corners square.

3. Figures (a), (b), (c), and (d) below are all quadrilaterals (four-sided shapes).
In each shape, draw a line from one corner to the opposite corner.

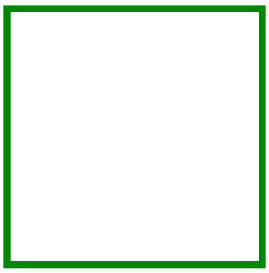
What kind of shapes do you get now? _____

Now draw another line from corner to corner in each shape, using the two other corners you have not used yet.

How many parts does each four-sided shape have now? _____

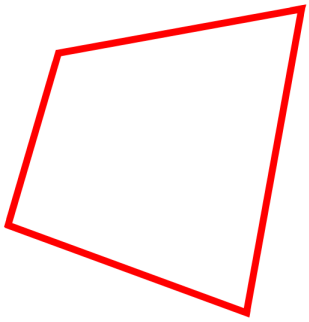
What kind of shapes are these parts? _____

a.

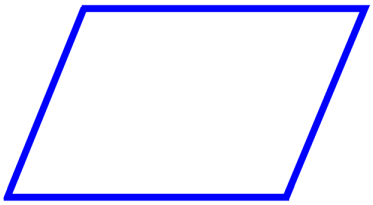


b.

c.



d.

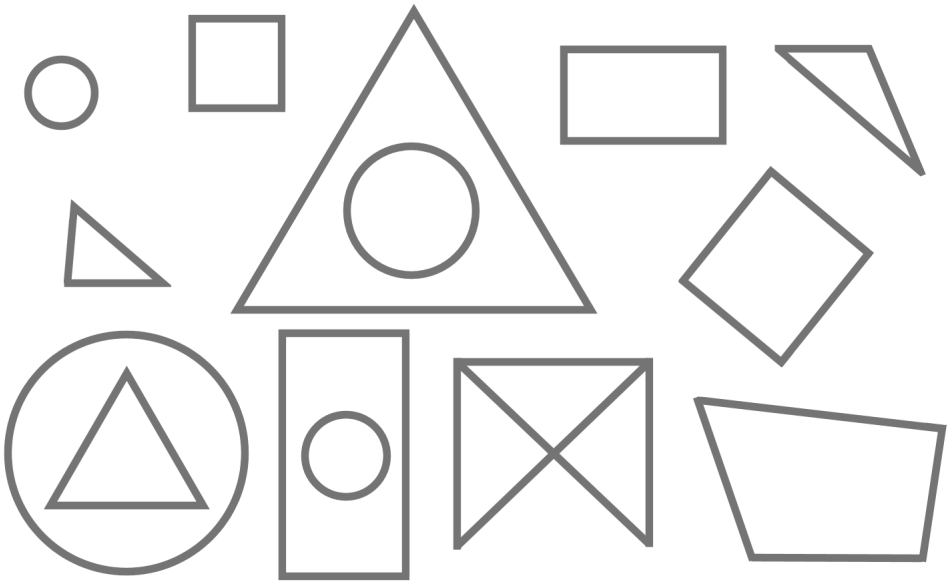


4. Choose a colour for each kind of shape, and colour them in!

Triangles are _____. Circles are _____.

Squares are _____. Rectangles are _____.

Other four-sided shapes are _____.



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Chapter 7: Adding and Subtracting Within 0-100

Introduction

This seventh chapter progressively presents a variety of easy addition and subtraction problems with numbers from 0 to 100. It includes these topics:

- Adding a two-digit number and a single-digit number without carrying:
  For example, 23 + 4 or 56 + 3.
- Subtracting a one-digit number from a two-digit number without borrowing:
  For example, 45 − 3 or 67 − 6.
- Adding or subtracting two-digit numbers in columns (one number under the other) without regrouping (carrying or borrowing).
- Recognising that sometimes in adding two-digit numbers we need to carry—to combine ten ones to make a new ten. We approach this concept using concrete visual models and don't treat it as an abstract concept.
- Practising specific strategies for adding or subtracting numbers under 20 (such as 7 + 9 or 15 − 8): a trick with nine and eight, adding just one more than a known sum, and using the relationship between addition and subtraction to subtract. Actually memorising these basic addition and subtraction facts is left for second grade.

The Lessons

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Add 'em Up
A game where you choose the correct answer to addition problems.
http://www.primarygames.com/add_up/2a.htm

Maths Games from AplusMath
Practise two-digit addition and subtraction with Matho, Hidden Picture, and Concentration.
http://www.aplusmath.com/games/

Speed Grid Addition
Find numbers on the grid that add up to the given number.
http://www.oswego.org/ocsd-web/games/SpeedGrid/Addition/urikares.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

Space Jumps
To add 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 thing as adding enough to make a ten first, then adding the rest. Get a "flight plan", which is the problem to solve. Then first add enough to make a ten by typing the number needed into the oval, and press the red button. Then, into the other oval, type the rest that the shuttle needs to go into the other oval, and press the red button.
http://www.ictgames.com/bridging.html

Froggy Hop
Find either 10 more or 1 more than a given number.
http://www.ictgames.com/frog.html

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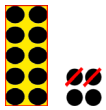
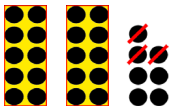
Subtracting Without Borrowing

 **14 – 2 = 12** "I can subtract 4 – 2 = 2; the 10 stays the same."	 **27 – 3 = 24** "I can subtract 7 – 3 = 4; the 20 stays the same."	Think of the *ones digits* only. Because we don't have to subtract from the tens, the tens stay the same.

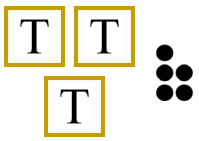
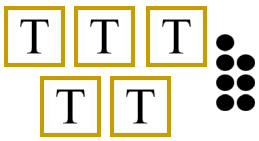
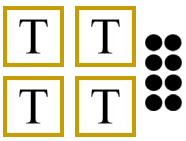
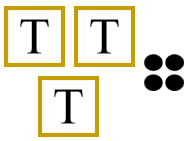
1. Subtract and compare. The top problem helps you solve the bottom one!

a. 8 – 2 = 6 28 – 2 = 26	**b.** 7 – 6 = _____ 17 – 6 = _____	**c.** 7 – 7 = _____ 67 – 7 = _____
d. 6 – 6 = _____ 56 – 6 = _____	**e.** 9 – 8 = _____ 49 – 8 = _____	**f.** 5 – 2 = _____ 95 – 2 = _____

2. Subtract. Write a "helping problem" below that uses only numbers less than 10.

a. 54 – 2 = _____ 4 – 2 = _____	**b.** 76 – 2 = _____ ____ – ____ = _____	**c.** 88 – 4 = _____ ____ – ____ = _____

3. Subtract. Cross out dots. Each box marked with a "T" stands for a ten.

a.  35 – 4 = _____ 35 – 3 = _____ 35 – 2 = _____	**b.**  57 – 7 = _____ 57 – 5 = _____ 57 – 3 = _____	**c.**  48 – 2 = _____ 48 – 4 = _____ 48 – 6 = _____	**d.**  34 – 1 = _____ 34 – 2 = _____ 34 – 4 = _____

4. Subtract.

a.	b.	c.	d.
77 – 6 = _____	47 – 2 = _____	57 – 4 = _____	15 – 3 = _____
22 – 1 = _____	75 – 1 = _____	86 – 2 = _____	98 – 4 = _____

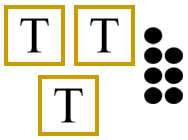
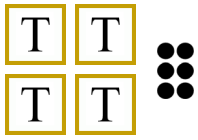
5. Find the missing numbers (addends).

a. 10 + _____ = 15	**b.** 21 + _____ = 22	**c.** 65 + _____ = 69
32 + _____ = 38	94 + _____ = 95	33 + _____ = 36
72 + _____ = 79	44 + _____ = 48	91 + _____ = 98

6. Solve.

a. In the morning Ariel sold 21 pictures that she had painted, and in the afternoon she sold 7. How many pictures did she sell in total?
b. Ariel had 30 pictures to sell when she started. How many does she have left now?
c. Ariel can paint a picture in one hour. She started painting at 4:30 and painted three pictures. At what time did she stop painting?

7. Take away all the ones (the dots) so that only the whole tens are left.

a.  37 – _____ = 30	**b.**  46 – _____ = 40	**c.**  28 – _____ = _____
d. 57 – ____ = _____	**e.** 85 – ____ = _____	**f.** 69 – ____ = _____

8. Solve. In the last row, make your own problems, and let a friend solve them!

a. 50 + ◯ = 57	**b.** ◯ + 2 = 88	**c.** 79 – 9 = ◯
d. ◯ – 5 = 20	**e.** 90 – ◯ = 85	**f.** 42 = 40 + ◯
◯ + _____ = _____	_____ + ◯ = _____	

9. Count by fives. Notice the patterns! A 100-chart or an abacus can help you.

a. 10, 15, _____, _____, _____, _____, _____, _____, _____

b. 1, 6, _____, _____, _____, _____, _____, _____, _____

c. 3, 8, _____, _____, _____, _____, _____, _____, _____

10. Continue the patterns.

a.	**b.**	**c.**
88 – 0 = _____	95 – 2 = _____	48 – 1 = _____
88 – 1 = _____	85 – 2 = _____	46 – 1 = _____
88 – 2 = _____	75 – 2 = _____	44 – 1 = _____
88 – _____ = _____	_____ – _____ = _____	_____ – 1 = _____
88 – _____ = _____	_____ – _____ = _____	_____ – _____ = _____
_____ – _____ = _____	_____ – _____ = _____	_____ – _____ = _____
_____ – _____ = _____	_____ – _____ = _____	_____ – _____ = _____
_____ – _____ = _____	_____ – _____ = _____	_____ – _____ = _____

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Chapter 8: Coins
Introduction

In this chapter about money and coins, the international version of Math Mammoth uses Australian currency in the chapter about money and coins. The download version of the text includes, in a separate folder, versions of this chapter in European, South African, Canadian, US, and British currencies, too. Since the book has only pictures of the coins, practising with real coins is of course advisable.

The goals of this chapter are:

- The student can identify and count 5-cent, 10-cent and 20-cent coins.
- The student can count the money in coins when the sum of the cents is 100.
- The student can identify the one-dollar and two-dollar coins and use them to make up a given amount of money.

The student will also practise making given money amounts with coins and using coins in simple shopping situations. We will practise making purchases and giving change more in grades 2 and 3.

The Lessons

Helpful Resources on the Internet

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

DISCLAIMER: These links were valid at the time 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 always recommended.

Change Maker
Earn 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/

Worksheets for Counting Money
Generate randomised worksheets for counting money. You can choose whether to count coins or banknotes, how many coins or banknotes to include in each problem, how many problems to include in the worksheet, and plenty of other options.
http://www.theteacherscorner.net/printable-worksheets/make-your-own/money-worksheets/

Money Memory Game
Match coins and notes with money amounts. You can choose the currency and the number of items to remember.
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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Counting Coins of Twenty and Fifty Cents

This coin is worth twenty cents or 20 c.

This coin is worth fifty cents or 50 c.

Don't confuse these coins! They are all silver-coloured.
To be sure of what they are, look at the numbers on them.

Count up → 50 70 80 85 90

Count up to find the total value in cents. Count the coins from the largest value to the smallest. Here we have 90 cents.

1. Count up the value of the coins.

a.  _____ cents

b.  _____ cents

c.  _____ cents

d.  _____ cents

e.  _____ cents

f.  _____ cents

g.  _____ cents

h.  _____ cents

i.  _____ cents

j.  _____ cents

70 c 80 c 90 c 95 c

You can count each set of two fives as a ten.

2. Add up the value of the coins. Write the total amount. Count two fives as a ten.

a.  _____ c	**b.**  _____ c
c.  _____ c	**d.**  _____ c
e.  _____ c	**f.**  _____ c

3. Make these amounts of money in three different ways. Either use real money or draw circles with "5", "10", "20" and "50".

a. 25 cents - one way	**d.** 35 cents - one way
b. 25 cents - another way	**e.** 35 cents - another way
c. 25 cents - another way	**f.** 35 cents - another way

When the number of cents is more than 20,
it's good to use the twenty-cent coin.
It is not wrong to use lots of ten-cent coins,
but using twenty-cent coins is more efficient.

 = 45 c

4. Make these money amounts using as few coins as possible. Think!

a. 25 cents	**b.** 35 cents
c. 55 cents	**d.** 65 cents
e. 70 cents	**f.** 100 cents
g. 80 cents	**h.** 45 cents
i. 75 cents	**j.** 30 cents