math MAMMOTH

Grade 1-A Worktext

- **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

Light Blue Series

By Maria Miller

Contents

Chapter 2: Subtraction Within 0-10

Chapter 3: Place Value Within 0-100

Foreword

Math Mammoth Grade 1-A and Grade 1-B worktexts comprise a complete math curriculum for the first grade mathematics studies. This curriculum is aligned to the Common Core standards. The four main areas of study for first grade are:

1. The concepts of addition and subtraction, and strategies for 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 understanding of measuring lengths as iterating length units (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 the clock to the half hour (chapter 5) and counting coins (chapter 8).

This book, 1-A, covers the concepts of addition and subtraction (chapters 1 and 2) and place value with two-digit numbers (chapter 3). The book 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 only or main mathematics curriculum, they are like a "framework," but you still have a lot of liberty in planning your child's studies. While addition and subtraction topics are best studied in the order they are presented, feel free to go through the geometry, clock, and money sections in a different order. This might even be advisable if your child is "stuck" on some concept, or is getting bored. Sometimes the brain "mulls it over" in the background, and the concept he/she was stuck on can become clear after a break.

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 review problems from past topics. This is totally opposite to the continually spiraling step-by-step curricula, in which each lesson typically is about a different topic from the previous or next lesson, and includes a lot of review problems from past topics.

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

For review, the download version includes an html page called *Make_extra_worksheets_grade1.htm* that you can use to make additional worksheets for computation or for number charts. You can also simply reprint some already studied pages. Also, the third chapter that practices addition and subtraction facts contains a lot of pages with problems, so you can choose to "save" some of them for later review.

I wish you success in teaching math!

Maria Miller, the author

Chapter 0: Kindergarten Math Review
Introduction

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

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

The Lessons in Chapter 0

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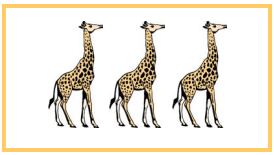
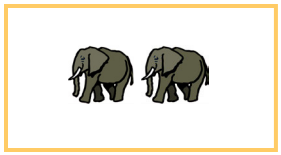
Counting

1. Count. Write the number in the box.

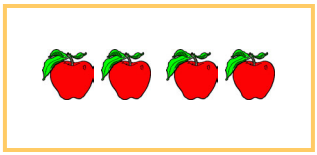


a. ☐

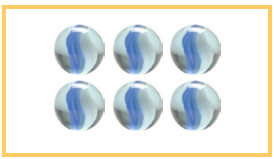


b. ☐

c. ☐

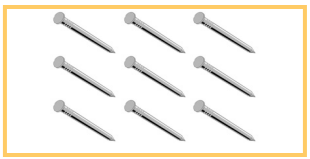


d. ☐

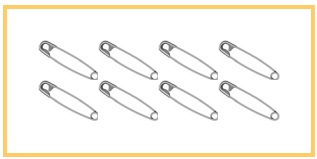


e. ☐

f. ☐



g. ☐

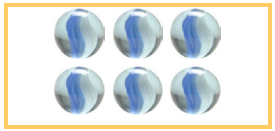


h. ☐

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

a.

☐



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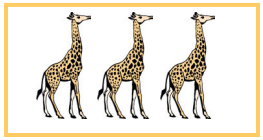
b.



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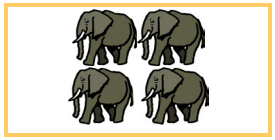

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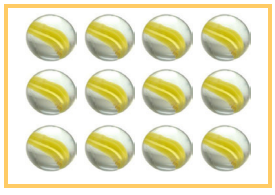
c.



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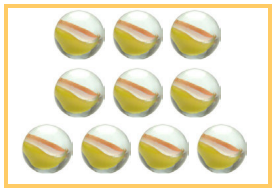

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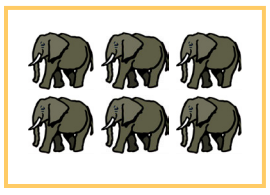
d.



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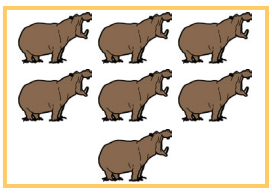

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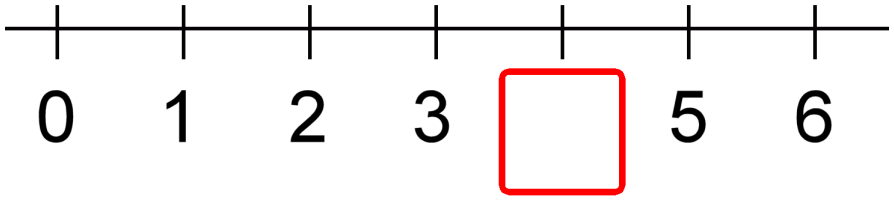
3. Write the missing number below the number line.

a.



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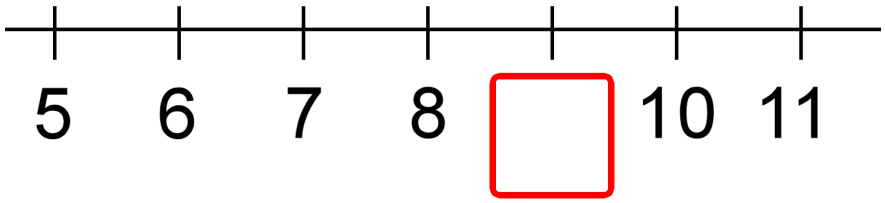
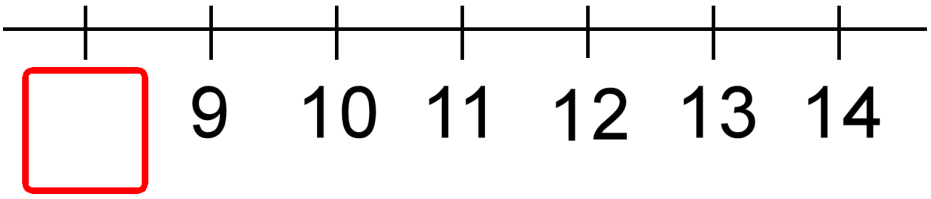
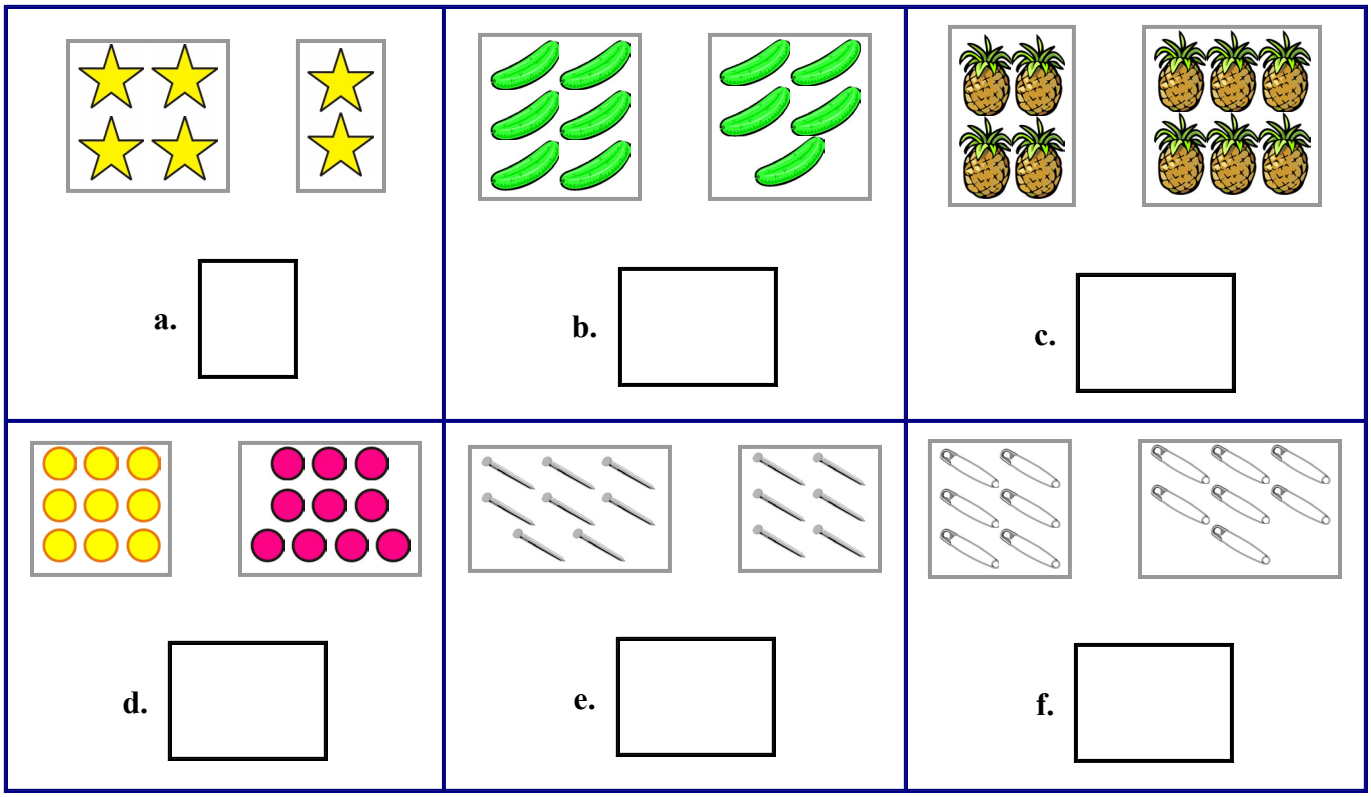


c.

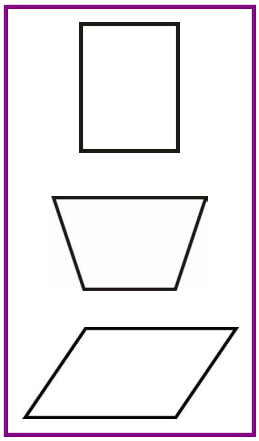


4. Circle the group that has more things. Then count ALL (both groups). Write the number in the box below.

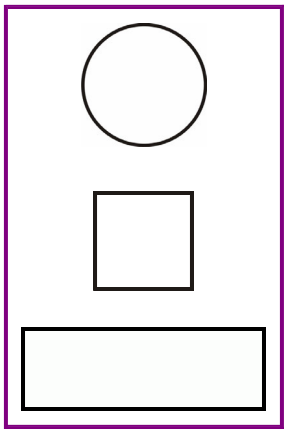


Position Words, Colors, and Shapes

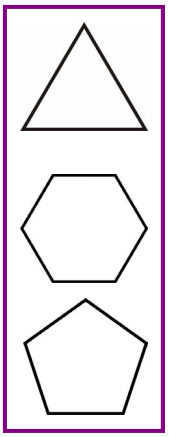
1. **a.** Color the top shape RED.



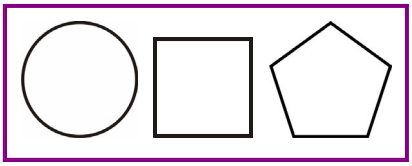
b. Color the bottom shape BLUE.



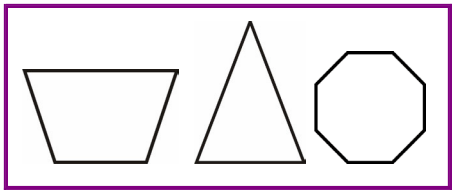
c. Color the middle shape YELLOW.



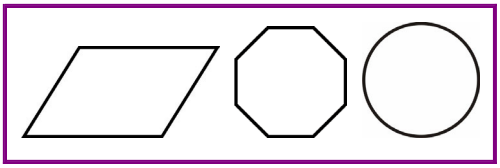
2. **a.** Color the shape on the right GREEN.



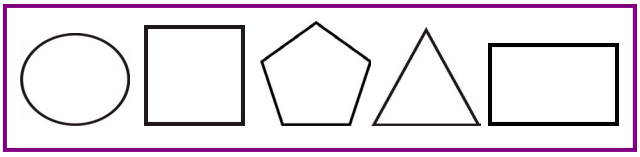
b. Color the shape in the middle BLUE.



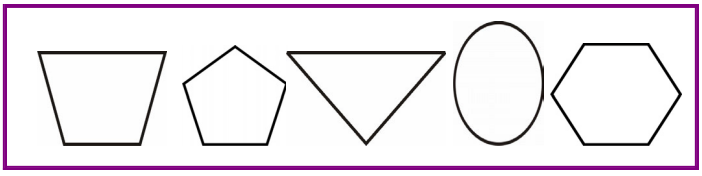
c. Color the shape on the left YELLOW.



d. Color the two shapes on the right ORANGE.



e. Color 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." The number of balls that the child needs to draw in order to make five is the number that goes on the empty line. So 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 practices 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 memorize addition facts within 10.

However, your child does not need to memorize 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 memorizing 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 memorizing 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 math 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 math facts on a poster and hanging it on the wall. Not all children need these, but feel free to use them if you like.

These same addition facts are studied further and used in the following chapters about subtraction, and in all later math work since they are constantly used. I recommend that children become fluent with addition facts within 0-10 by the end of first grade, as mentioned in the Common Core Standards. The first three chapters in Math Mammoth Grade 1-A constantly practice all these facts. If your child does not know them by heart by the time you start the 1-B book, continue practicing them with games and other drills.

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!

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 practice the addition facts and also make math fun.

The Lessons in Chapter 1

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, 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 to his right (as in "Go Fish"), and the player on the right, if he 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 hand that add up to 10. The player who first discards all the cards from his 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 back without showing how many. Then he 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 turn to hide some and ask the next player to answer. If he gives a wrong answer, he forfeits his 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 (or Subtraction) Challenge

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 use 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 practice addition.

Helpful Resources on the Internet

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

Video Lessons - Addition Within 0-10
A set of videos by Maria that match the topics in this chapter.
http://www.mathmammoth.com/videos/grade_1/1st-grade-math-videos.php#addition

Children's Addition Quiz
A set of five problems. Choose the maximum for the sum from the list of numbers below the quiz.
http://www.thegreatmartinicompany.com/Math-Quick-Quiz/addition-kid-quiz.html

Children Compare Numbers from Mr. Martini's Classroom
Compare two numbers. Press the number below to choose the biggest number that will appear.
http://www.thegreatmartinicompany.com/Kids-Math/compare-number.html

Balloon Pop Math – Compare Numbers
Click on "is greater than", "is equal to", or "is less than" to compare the two given numbers.
https://www.sheppardsoftware.com/mathgames/earlymath/BPGreatLessEqualWords.htm

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

Math Lines
Practice adding in this fun game. First, choose the number to practice. Then, shoot the numbered marble from the cannon into a numbered marble such that the numbers total the target number.
http://www.mathnook.com/math/math-lines-6.html

Number Twins
First, click on the number that you want to practice. Then, match pairs of balls that add up to that number.
http://www.sheppardsoftware.com/mathgames/numbertwins/numbertwins_add_10.htm

Number Trails Addition
Create a trail of numbers that add to the given sum. How many achievements can you collect? Double-click the last number to end each trail.
http://www.mathplayground.com/number_trails_addition.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

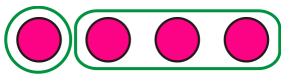
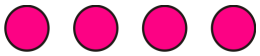
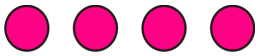
Addition with Missing Numbers
Match the missing number to its correct value.
http://www.sheppardsoftware.com/mathgames/matching/AdditionX.htm

Balloon Pop - Add
Pop the balloons in order: from the smallest sum to the largest sum.
http://www.sheppardsoftware.com/mathgames/numberballoons/NumberBalloons_add_level1.htm

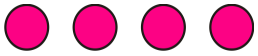
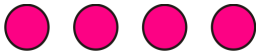
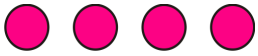
Tux Math
A versatile free software for math facts with many options. Includes all operations.
http://sourceforge.net/projects/tuxmath

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

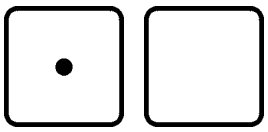
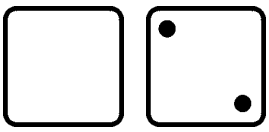
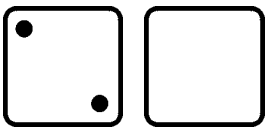
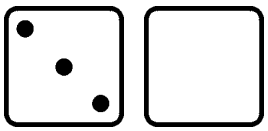
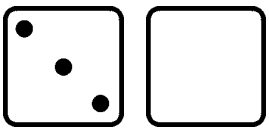
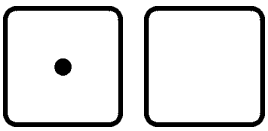
2. Make two groups. Write how many are in the second group.

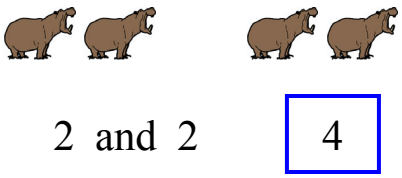
a. 4  1 and _____	**b.** 4  2 and _____	**c.** 4  3 and _____
d. 5  4 and _____	**e.** 5  3 and _____	**f.** 5  2 and _____
g. 5  1 and _____	**h.** 5  5 and _____	**i.** 5  0 and _____

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 _____



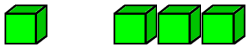
2 and 2 = 4

"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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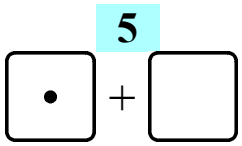
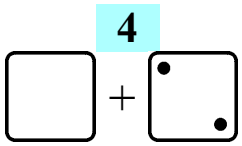
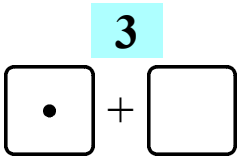
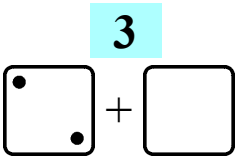
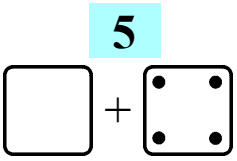
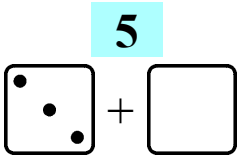
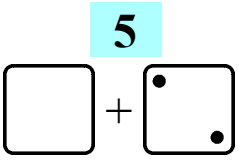
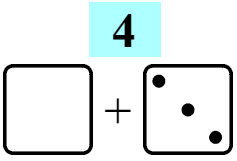
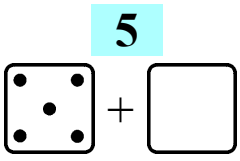
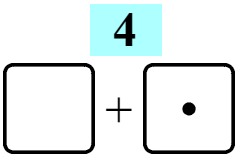
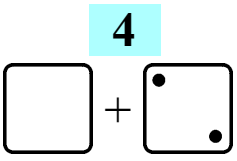
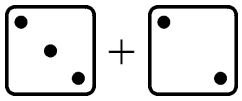
Missing Items

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 in 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

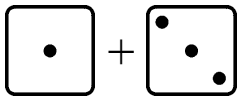
1. Complete the addition. Draw the missing dots. The total is on top.

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



3 + _____ = 5

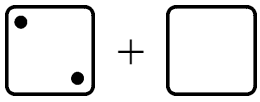
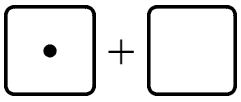
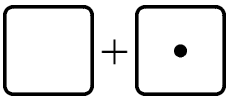
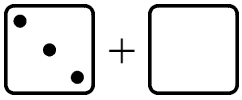
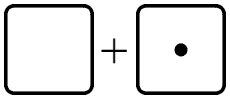
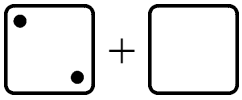
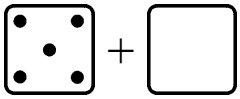
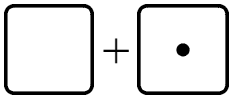
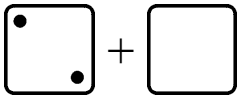
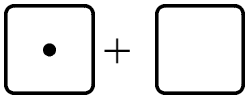
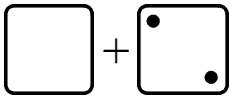
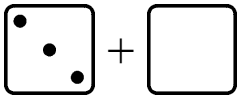
The TOTAL is now written after the equal sign " = ".
The answer is 3 + _2_ = 5



_____ + 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

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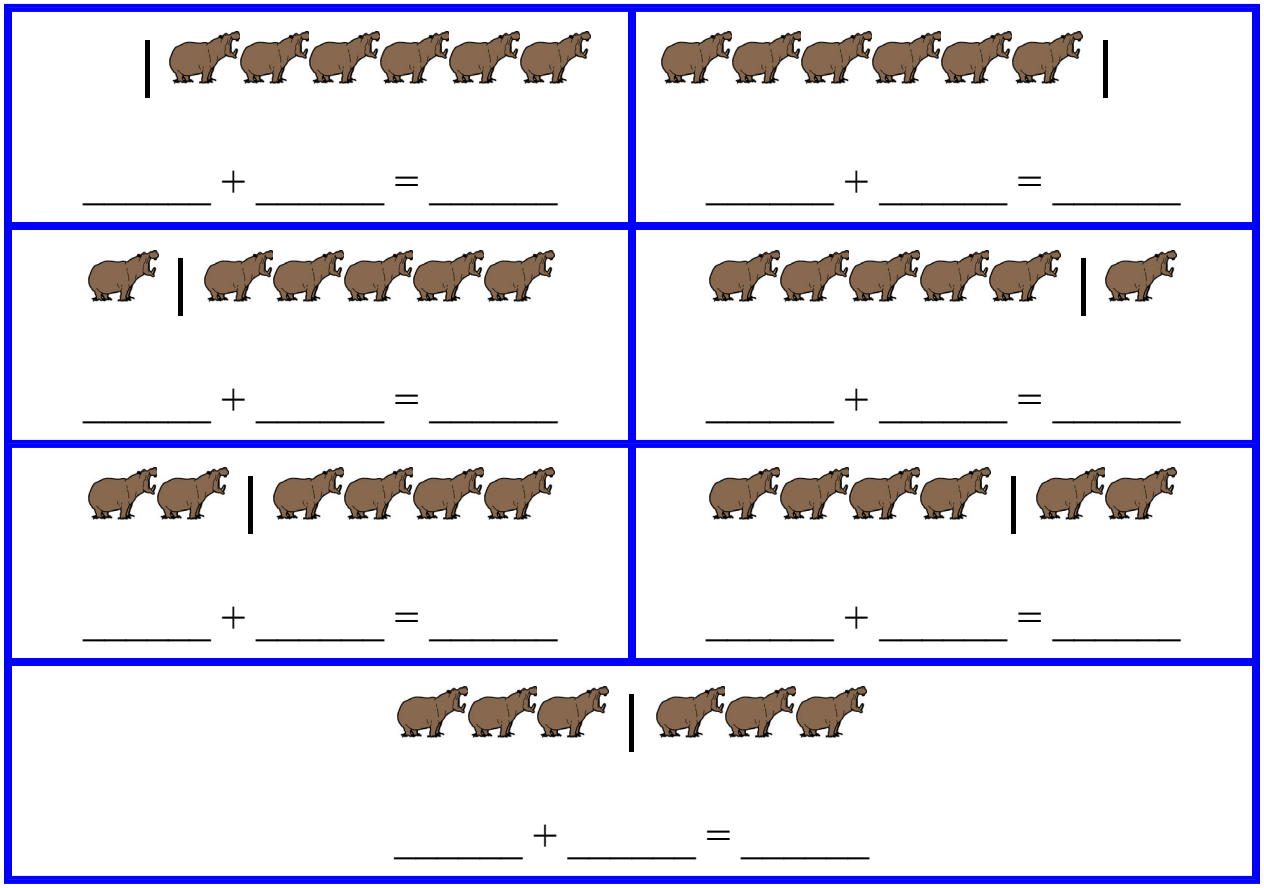
Sums with 6

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).

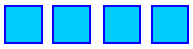
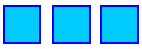
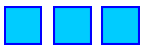
3. **Drill.** Don't write the answers but just solve them in your head.

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.

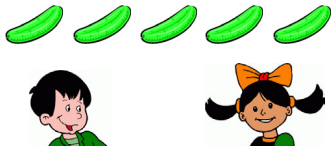
a. 1 + 5 = _____	**b.** 2 + 3 = _____	**c.** 4 + 2 = _____

5. Draw more little boxes to illustrate the missing number.

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

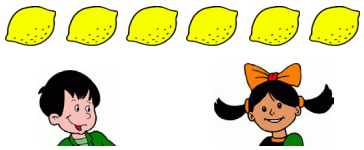
6. Jack and Jill share 5 cucumbers and 6 lemons in different ways. Find how many Jill gets. You can cover the cucumbers or lemons with your hand to help.

a. 5



Jack gets:	Left for Jill:
2	
1	
5	
3	
0	
4	

b. 6



Jack gets:	Left for Jill:
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 of *Math Mammoth Grade 1-A* covers the concept of subtraction, the relationship between addition and subtraction, and the various meanings of subtraction. Keep in mind that the specific lessons mentioned below 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.

In the 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 very 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 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.

Kids' Subtraction Quiz from Mr. Martini's Classroom
A five-question quiz. Choose the maximum number used from the list of numbers below the quiz.
http://www.thegreatmartinicompany.com/Math-Quick-Quiz/subtraction-kid-quiz.html

Subtraction Harvest
Choose the correct answers for the subtraction problems to harvest the apples.
http://www.sheppardsoftware.com/mathgames/earlymath/subHarvest.htm

Subtraction Mystery Picture Game
Match the subtract problems with their answers to uncover a "mystery picture".
http://www.dositey.com/2008/addsub/Mystery4.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

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

Pearl Search
Click on the clam that contains the correct answer to the subtraction problem, and collect a pearl for each correct answer. The sooner you get the pearls, the higher your score!
http://www.sheppardsoftware.com/mathgames/popup/popup_subtraction.htm

Fruit Shoot Number Line Subtraction
Click on the subtraction sentence on the fruit that matches the number line. Choose level 3 for this game.
http://www.sheppardsoftware.com/mathgames/earlymath/FS_NumberLine_minus.htm

Mathemorphosis Subtraction Game
Solve simple subtraction problems to help the caterpillar transform into a butterfly.
http://mrnussbaum.com/mathemorphosis-2/

Subtraction Sense – make subtraction sentences
Drag and drop the number cards to make 'sum' sense. Try to answer 8 questions in 2 minutes!
http://resources.oswego.org/games/SumSense/sumsub.html

Subtraction game – Bowling
Answer subtraction problems until all of the pins have been knocked down.
http://www.abc.net.au/countusin/games/game8.htm

Simple Subtraction
Help Duck Von Fly get to his destination more quickly by clicking on the cloud with the correct answer.
http://www.toonuniversity.com/flash.asp?err=513&engine=12

Word Problems – Add and Subtract within 10
Solve simple word problems by clicking on the correct answer.
http://www.abcya.com/kindergarten_word_problems_add_subtract.htm

Block Buster
Click on blocks with numbers that form fact families. The blocks must be touching each other.
http://www.roomrecess.com/pages/BlockBuster.html

Basic Fact Families
Find the missing equation in each fact family.
http://mrnussbaum.com/12grade1/

Space Shuttle Launch
Before playing, choose which operation to practice, and the level of difficulty. Answer the questions correctly, and the space shuttle will be launched successfully.
http://www.playkidsgames.com/games/shuttleLaunch/default.htm

Balancing Calculations
Answer as many questions as you can in this timed online quiz.
http://www.snappymaths.com/mixed/addsubrelate/interactive/addsubbalancew10/addsubbalancew10.htm

Tux Math
A versatile free software for math facts with many options. Includes all operations.
http://sourceforge.net/projects/tuxmath

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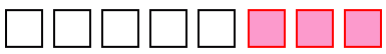
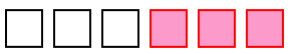
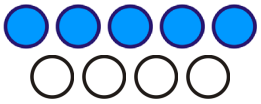
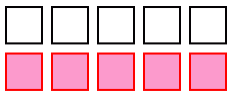
Subtraction and Addition in the Same Picture

How many colored circles? How many white ones?  4 + 6 = 10	 3 + 4 = 7
Cover the colored circles. Write a subtraction sentence.  10 – 4 = 6	Cover the colored 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 color them to fit the addition sentence. Then cover the **COLORED** circles and make a subtraction sentence.

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

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

_____ + _____ = _____

_____ − _____ = _____

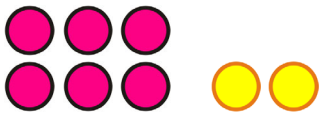
d. Mary saw eight chairs on the lawn, and two had blown over. How many were still standing upright?

_____ + _____ = _____

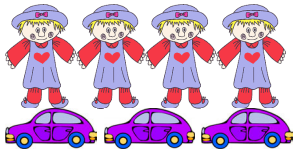
_____ − _____ = _____

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. Jane 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. Mary 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 5 – 3 = 2

3 + 2 = 5 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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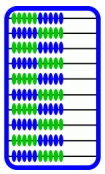
Chapter 3: Place Value Within 0-100
Introduction

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-20

You can browse Amazon's abacus collection at this link:
http://www.amazon.com/gp/search?ie=UTF8&keywords=abacus&tag=mathmammoth-20

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

Besides the abacus, we also use a visual model of blocks where ten of them "snap" together to form a stick. If you already have these so-called base-ten blocks, you can use them along with the visual exercises, if you prefer.

Moreover, we also use number lines and a 100-chart. Number lines help visualize 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 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 certain size group*. The digit in each position tells us how many of that size 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 itself 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's 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 in Chapter 3

Helpful Resources on the Internet

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

PLACE VALUE

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

Fruit Splat Place Value
Click on the fruit with the number that matches the number of tens and ones that are shown. Choose "medium" level for this game.
http://www.sheppardsoftware.com/mathgames/placevalue/fruit_shoot_place_value.htm

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

Name That Number
Match the number on the fruit to the name of the number.
http://www.sheppardsoftware.com/mathgames/earlymath/fruitShootNumbersWords.htm

Number Line
Illustrate 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

Lifeguards
Move the boat the correct number of jumps on the number line to save the person.
http://ictgames.com/LIFEGUARDS.html

100-CHART

Count to 99!
Enter the number shown by the colored blocks on a hundred chart.
http://www.thegreatmartinicompany.com/Kids-Math/kids-count-99.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

Interactive 100-Chart
Choose a color and create pretty number patterns on this interactive chart.
http://www.abcya.com/interactive_100_number_chart.htm

Number Grid Fireworks
Click on the correct square on the number chart to find the hidden fireworks.
http://www.abcya.com/100_number_grid.htm

Fill in the Missing Numbers – customizable chart
Practice filling in numbers in order, or by types. Set the "End Number" to 120.
http://mrnussbaum.com/number-chart-2/

Hundred Chart Game
Answer the questions using the number chart.
http://www.softschools.com/math/hundreds_chart/games/

Interactive Hundred Chart
Color to see skip-counting patterns.
http://www.mathsisfun.com/numbers/number-chart.php

COMPARING

Number Comparison at Mr. Martini's Classroom
Click on the < , > , or = sign to be put in between two numbers.
http://www.thegreatmartinicompany.com/inequalities/number-comparison.html

Caterpillar Slider
Click to place the leaves with numbers in the correct order for the caterpillar to munch. First, choose your minimum and maximum numbers (such as 0 and 100).
http://www.ictgames.com/caterpillar_slider.html

Order Numbers 1-100 Balloon Pop
Pop the balloons in order from the smallest to the greatest.
http://www.sheppardsoftware.com/mathgames/earlymath/BalloonPopOrder2.htm

SKIP-COUNTING

Skip-Count by 2s – Balloon Rise – Washington Monument
Practice skip-counting by 2s and help the hot-air balloons rise to the top of the Washington Monument.
http://www.free-training-tutorial.com/skip-counting/skip-counting-by-twos-washington-monument.html

Skip-Count by 5s – Balloon Rise – Empire State Monument
Practice skip-counting by 5s and help the hot-air balloons rise to the top of the Empire State Monument.
http://www.free-training-tutorial.com/skip-counting/skip-counting-by-fives-empire-state.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

Connect the Dots
Connect the dots by counting by twos.
http://www.abcya.com/connect_the_dots_skip_count_2.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

GRAPHS

Bar Graph Sorter
Sort shapes according to shape or color and fill the bar graph.
http://www.shodor.org/interactivate/activities/BarGraphSorter/

Interactive Bar Chart with Questions
Choose a theme and the desired number of intervals for your bar chart.
Then, answer the questions.
http://www.topmarks.co.uk/Flash.aspx?f=barchartv2

Tally Chart
Use the tally chart to answer 5 questions.
http://www.softschools.com/math/data_analysis/tally_chart/

Interactive Tally Chart and Bar Graph activity
Click on the children to find out their favorite hobbies. Using that information, make a frequency table and a bar chart.
http://www.topmarks.co.uk/Flash.aspx?b=maths/interpretingdata

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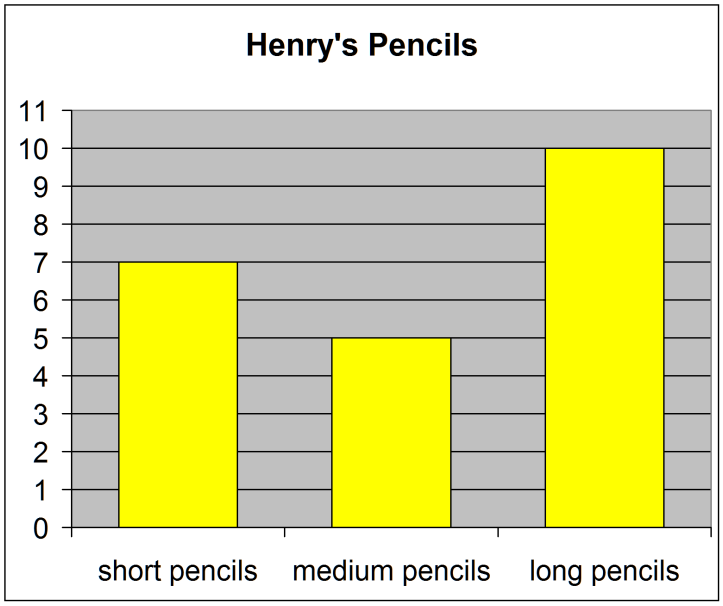
Bar Graphs

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, Henry has 7 short pencils.



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

   b. How many long pencils does Henry have?

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

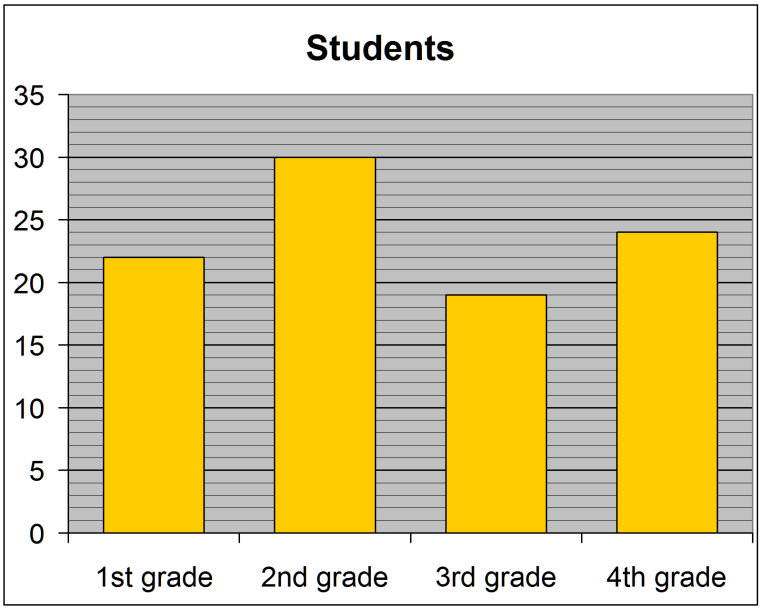
   d. How many more long pencils does he have than short ones?

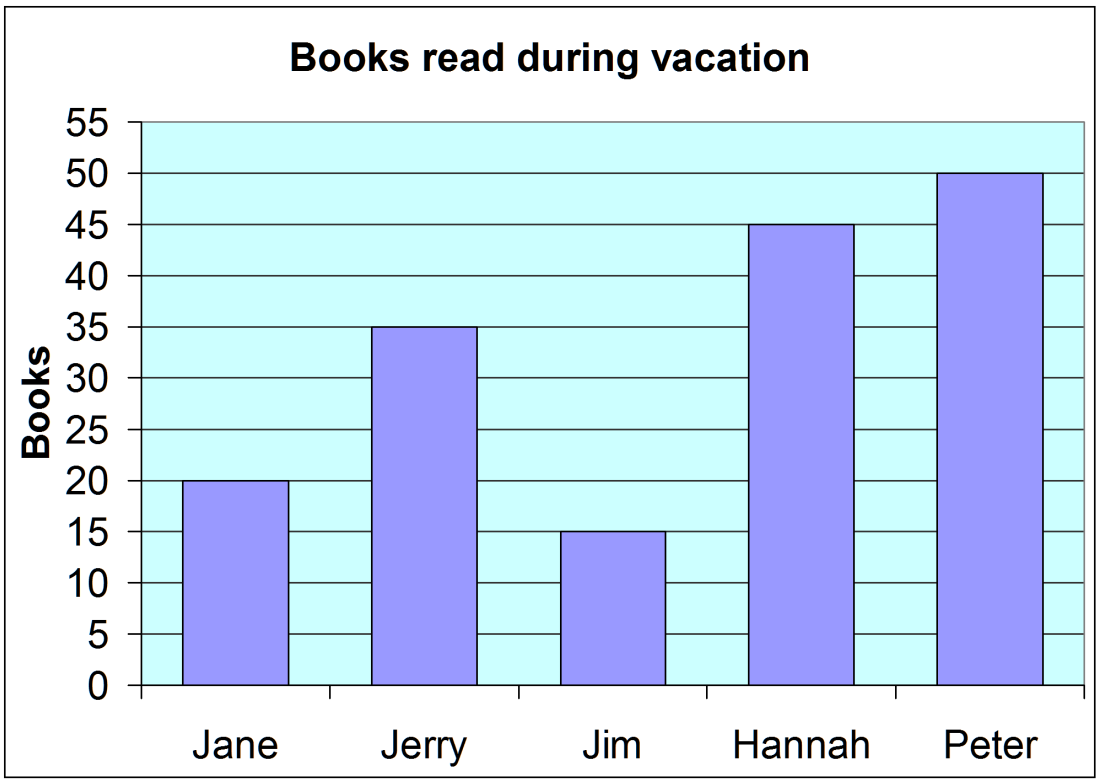
2. Here, the bar for first grade students reaches two little lines past 20. That's 22 students.

   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.

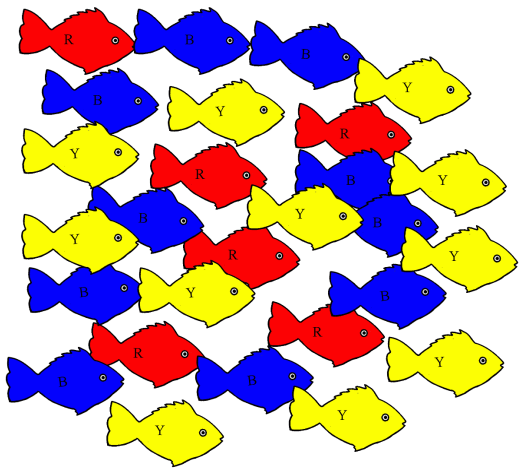
𝍸 | **a.** _____	𝍸 𝍸 || **b.** _____	𝍸 𝍸 𝍸 |||| **c.** _____	𝍸 𝍸 𝍸 𝍸 ||| **d.** _____

2. Draw tally marks for these numbers.

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

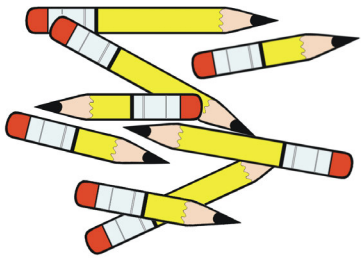
3. Count the fish. Use tally marks to keep track. Mark each fish you count and make a tally mark for it. That way you won't count the same fish twice. Then write the number under "Count".

	Tally Marks	Count
Red		
Blue		
Yellow		

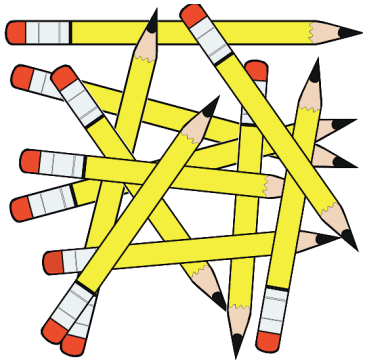


4. Count the pencils in each group. Use tally marks to keep track. Mark each pencil as you count it, and make a tally mark in the box. That way you won't count the same pencil twice.

GROUP 1:



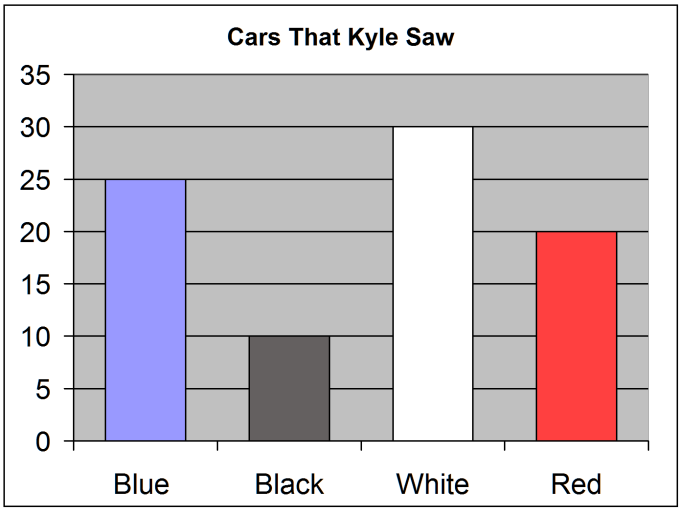
GROUP 2:



	Tally Marks	Count
Group 1		
Group 2		

5. Do the tally marks show the same counts that the bar graph does? If not, correct the tally.

	Tally Marks
Blue	𝍸 𝍸 𝍸 𝍸 𝍸 ||
Black	𝍸 𝍸
White	𝍸 𝍸 𝍸 𝍸 ||
Red	𝍸 𝍸 𝍸



6. (Optional) Tally marks are most useful for counting things that are happening rather slowly, for example, birds that fly into the yard. For this project, count something using tally marks. For example, you could go outside and count how many red and how many grey cars you see pass by your house in 20 minutes.

	Tally Marks	Count
Group 1		
Group 2		

Review

1. Name the numbers using numbers and words.

a. 1 ten 5 ones *15* _____

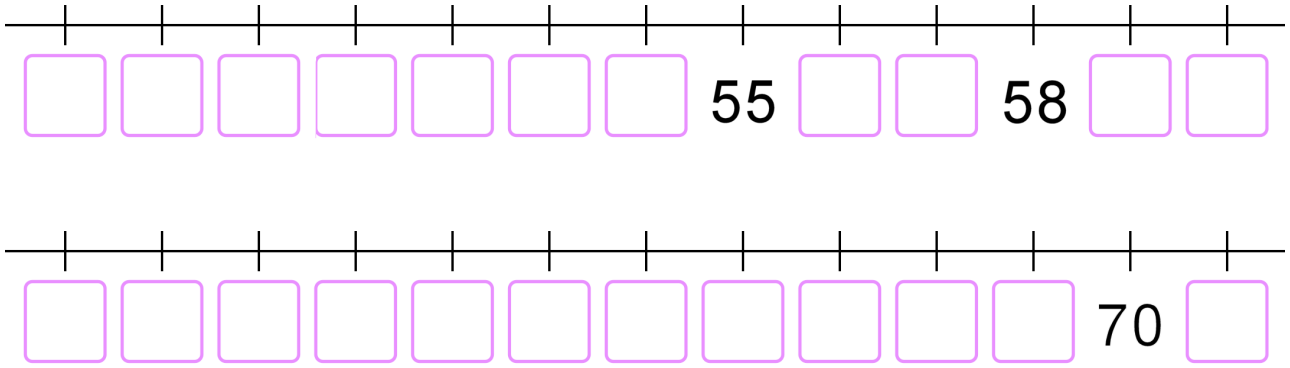
b. 6 tens 7 ones _____ _____

c. 4 tens 0 ones _____ _____

d. 10 tens 0 ones _____ _____

e. 5 tens 1 one _____ _____

2. Fill in the numbers missing from the number lines.



3. Circle the number that is *more*.

a.	**b.**	**c.**	**d.**	**e.**
78 87	22 25	56 57	68 80	101 11

4. Count. You can also say this aloud with your teacher.

97, 98, _____, _____, _____, _____, _____,

_____, _____, _____, _____, _____, _____, _____.

5. Break the numbers into their tens and ones.

a. 45 = 40 + 5 68 = _____ + _____	**b.** 25 = _____ + _____ 54 = _____ + _____	**c.** 78 = _____ + _____ 91 = _____ + _____

6. Build the numbers.

a. 50 + 7 = _____ 20 + 0 = _____	**b.** 8 + 10 = _____ 9 + 70 = _____	**c.** 90 + 6 = _____ 9 + 60 = _____

7. Put the numbers in order.

a. 57, 17, 75 _____ < _____ < _____	**b.** 18, 48, 44, 41 _____ < _____ < _____ < _____

8. Compare the expressions and write <, >, or =.

a. 56 ☐ 5 + 60 **b.** 20 + 8 ☐ 33 **c.** 60 + 5 ☐ 50 + 6

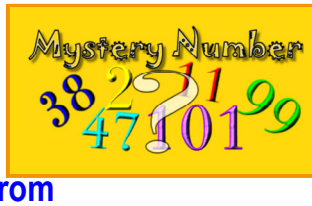
d. 34 ☐ 30 + 6 **e.** 4 + 90 ☐ 49 **f.** 80 + 2 ☐ 70 + 9

9. Skip-count. (You can say this aloud with your teacher.)

a. 13, 15, 17, _____, _____, _____, _____, _____, _____

b. _____, _____, _____, _____, _____, _____, 78, 88, 98

c. _____, _____, _____, _____, _____, 55, 60, 65, _____



I have five fewer ones than 39, and one more ten than 47.