Contents

Chapter 3: Place Value 0-100

Foreword

Math Mammoth 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 customized for Canadian audience in a few ways. The US version is aligned to the Common Core Standards, so it may not be properly aligned to the first grade standards in your province. However, you can probably find material for any missing topics in neighbouring grades. For example, let's say that your province mandates the study of multiplication tables in grade 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.

This International version of Math Mammoth for Canada differs from the US version in these aspects:

- The currency used in the money chapters in grades 1-3 is the Canadian dollar. (Additionally, the download version of this curriculum includes the chapter on money for European, South African, US, British, Australian and New Zealand currencies, in grades 1-3.)
- 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 Letter.

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:

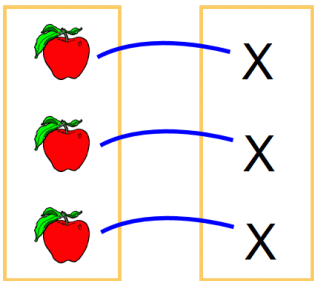
- writing the numerals 0 to 9;
- counting up to 20;
- position words, colour words and some shapes (circle, triangle, square);
- simple patterns.

The Lessons in Chapter 0

Equal Amounts; Same and Different

1. Write an X for each thing in the other box.

a.



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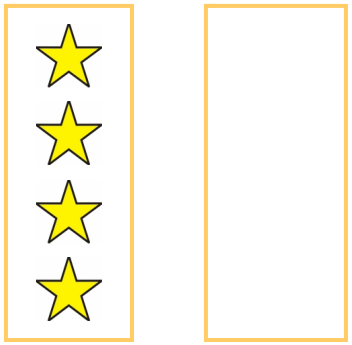

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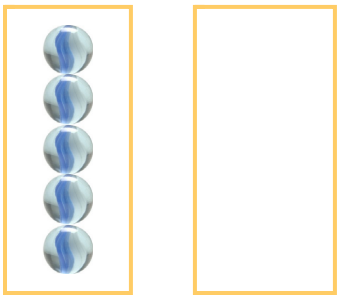

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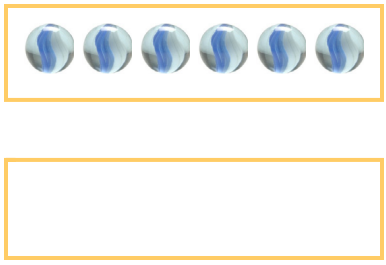
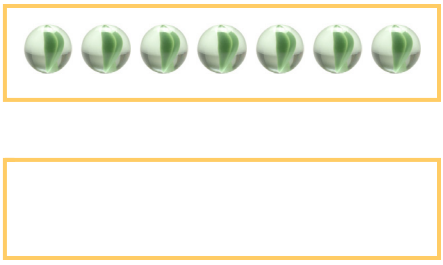
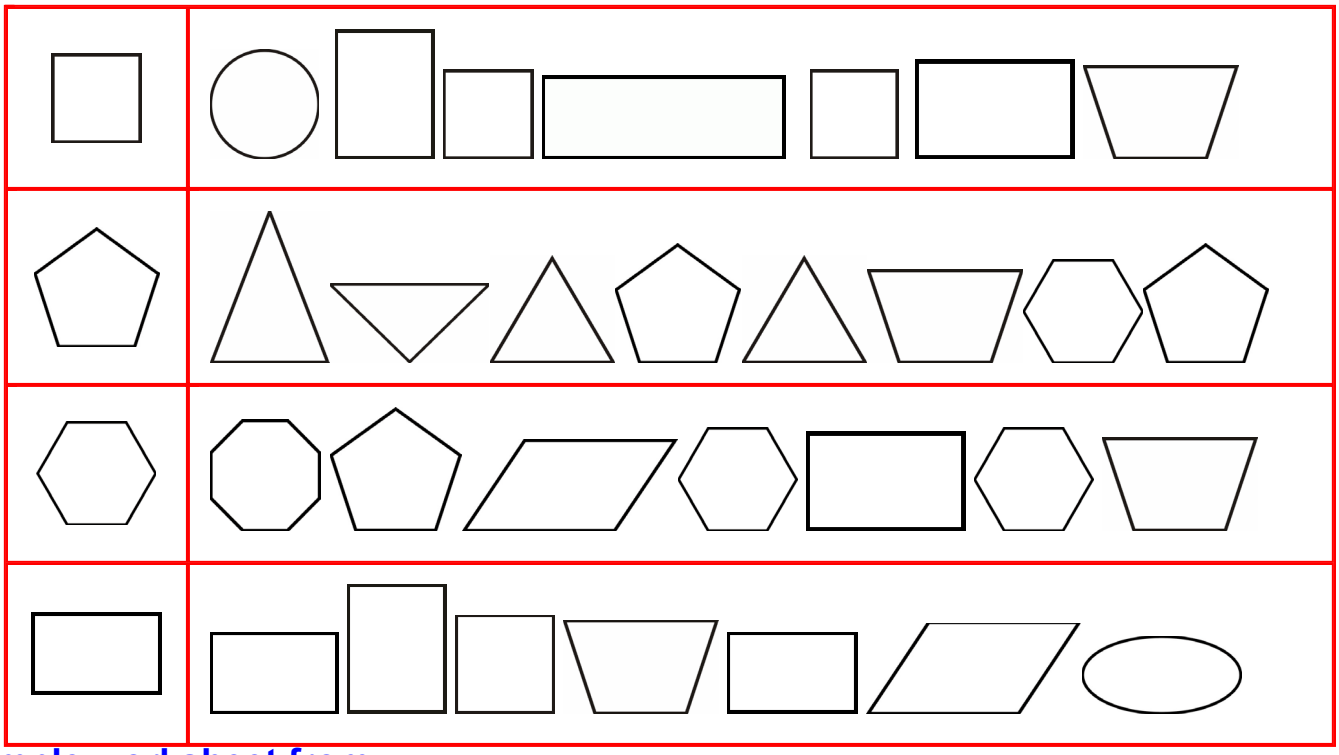


f.



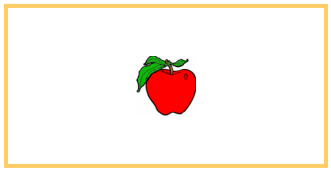
2. Colour in the shapes that are the same as the first shape.



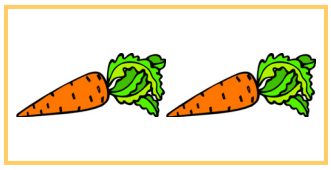
Writing Numbers

1. Write the number.

0



1



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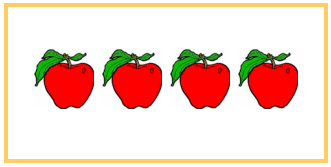
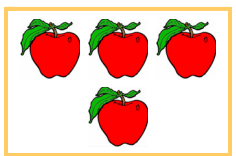
3



4

2. Count and write the number.

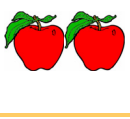
a. 

b. 

c.

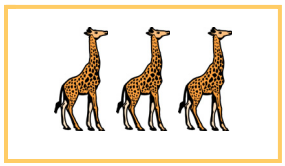
d. 

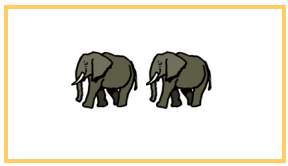
e. 

f. 

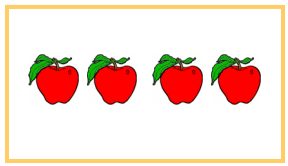
Counting

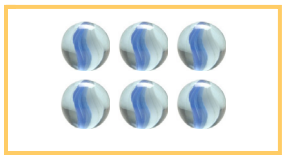
1. Count. Write the number in the box.


a. ☐

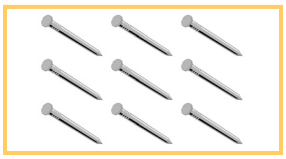

b. ☐

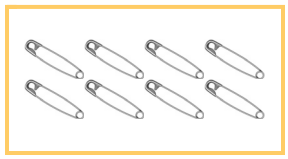

c. ☐


d. ☐

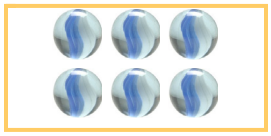

e. ☐

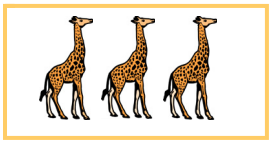
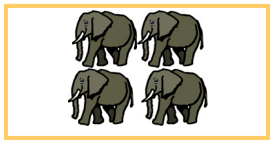

f. ☐


g. ☐


h. ☐

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



a. ☐ ☐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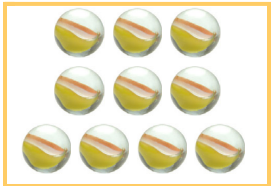
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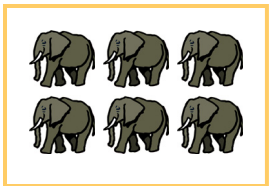
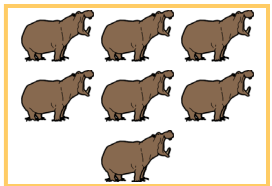
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Chapter 1: Addition Within 0-10
Introduction

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." Instead, use the general guideline that first graders should finish 1-2 pages daily or 7-9 pages a week. Please see the user guide at https://www.mathmammoth.com/userguides/ for more guidance on pacing the curriculum.

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 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 fully 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 first 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 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.

These same addition facts are studied again in the following chapter about subtraction. They are also used constantly in all later math work. I recommend that children become fluent with addition facts within 0-10 by the end of first grade.

Another important thread running here 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 $2 + \_\_\_ = 6$ as an unknown addend problem, and not as the addition problem $2 + 6$. 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 $9 + 4$.

The chapter involves a lesson about 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 (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. Don't forget to check out the free videos matched to the curriculum at https://www.mathmammoth.com/videos/.

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 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.

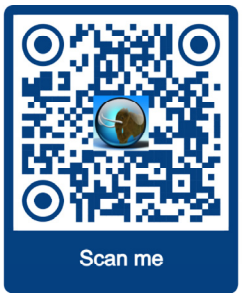
Variations:
* This game is easily adapted for subtraction, multiplication, and fractions.
* You can also use dominoes instead of two playing cards.

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

Helpful Resources on the Internet

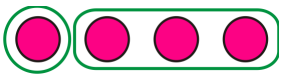
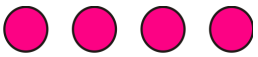
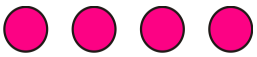
We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

https://links.mathmammoth.com/gr1ch1

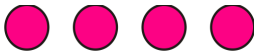
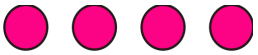
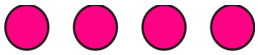


Two Groups and a Total

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

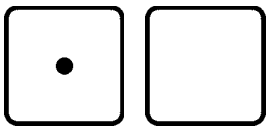
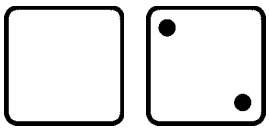
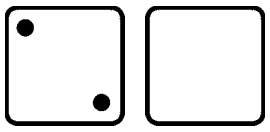
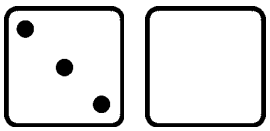
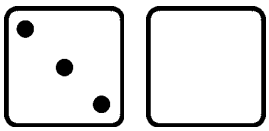
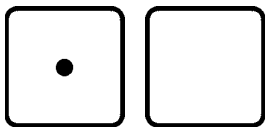
2. Make two groups. Write how many are in the second group.

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 _____

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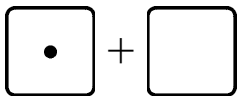
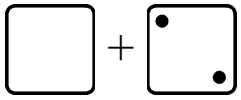
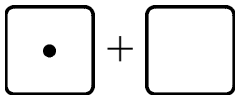
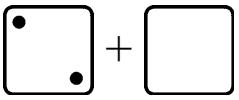
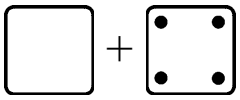
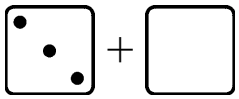
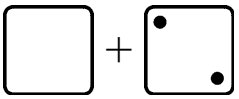
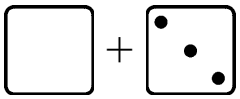
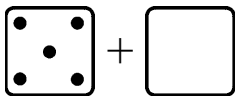
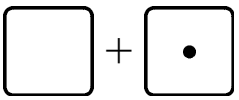
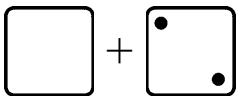
Missing Items

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.	**5**  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?"	**4**  _____ + 2

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

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

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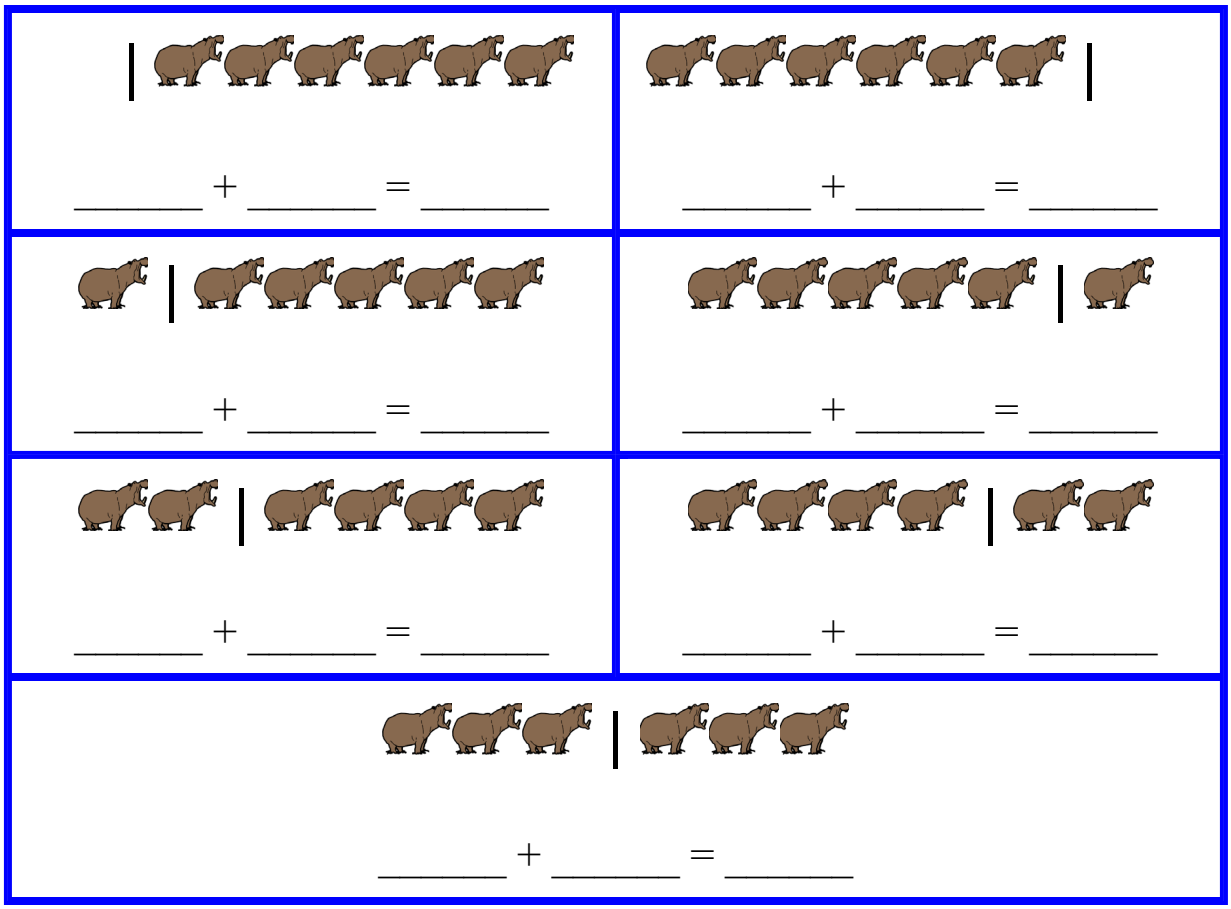
Sums with 6

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).

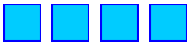
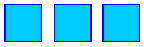
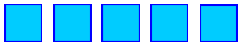
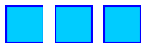
3. **Drill.** Don't write the answers but just solve them in your head.

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.

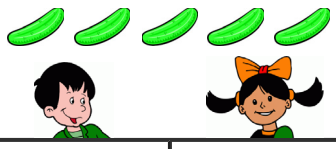
a. 1 + 5 = _____	b. 2 + 3 = _____	c. 4 + 2 = _____

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

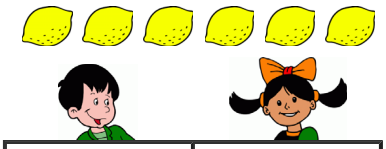
6. Larry and Emily share 5 cucumbers and 6 lemons in different ways. Find how many Emily gets. For the number shown, you can cover the cucumbers or lemons with your hand to see how many Emily gets.

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. A reminder: 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.

The following lesson, *Subtraction and Addition in the Same Picture*, begins the study of 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*. As an example, the child writes 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 find how many more or how many fewer objects one person has than the other by drawing the objects. This lesson can easily be done with manipulatives if desired.

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 write the missing addend sentence $4 + \_\_\_ = 6$ to find how how many more Ann has. In the next lesson the child then learns to write subtraction sentences for such problems.

The Lessons in Chapter 2

Helpful Resources on the Internet

We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

https://links.mathmammoth.com/gr1ch2

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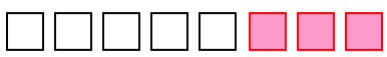
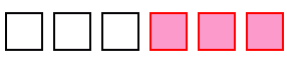
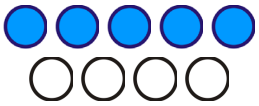
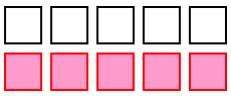
Subtraction and Addition in the Same Picture

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 = _____ _____ – _____ = _____

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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?

_____ + _____ = _____

_____ − _____ = _____

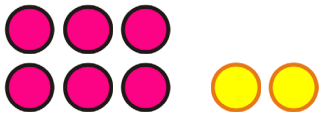
d. Gloria saw eight chairs on the lawn, and two had blown over. How many were still standing upright?

_____ + _____ = _____

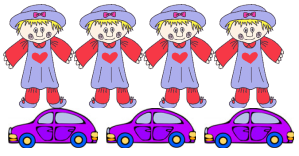
_____ − _____ = _____

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 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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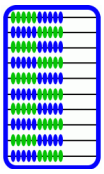
Chapter 3: Place Value Within 0-100
Introduction

In this chapter, children learn numbers up to 120. They compare whole numbers within 100, and learn to think of them in terms of tens and ones.

When children count, they basically just learn numbers as some kind of continuum that goes on without end. With simple counting, your child might not catch on to the inherent structure of the number system. Our number system is based on the idea that if you have lots and lots of objects, the efficient way to count and denote them is with *groups* of tens, hundreds, and thousands — not individually.

The crucial point in understanding the concept of place value is therefore that a **certain position represents a group of a specific size**. The digit in each position tells us how many groups of that size 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 how many of that group.



The initial lessons of the book that introduce tens and ones use a **100-bead abacus** extensively. This 100-bead abacus or school abacus simply contains ten beads on ten rods, for a total of 100 beads. It is not the special abacus used by the Chinese or the Japanese. Each bead simply represents one. The 100-bead abacus lets children both "see" the numbers and use their touch while making them.

You will need to purchase this school abacus separately, such as on Amazon, or make your own.

You can browse Amazon's abacus collection at this link:
https://www.amazon.com/s?k=abacus+100+beads&ref=nb_sb_noss_1&tag=mathmammoth-20

Instead of a physical abacus, you can use this online virtual abacus:
https://apps.mathlearningcenter.org/number-rack/

Or, you can make one on your own. This is a fairly easy craft project and you can easily find instructions for it on the Internet (search for example for "DIY abacus").

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.

While most of the lessons in the book focus on place value, students also practice adding and subtracting multiples of ten and skip-counting. The two lessons at the end of the chapter about tally marks and graphs are real-life applications of two-digit numbers.

The Lessons

Helpful Resources on the Internet

We heartily recommend you take a look at the list. Many of our customers love using these resources to supplement the bookwork. You can use the resources as you see fit for extra practice, to illustrate a concept better, and even just for some fun. Enjoy!

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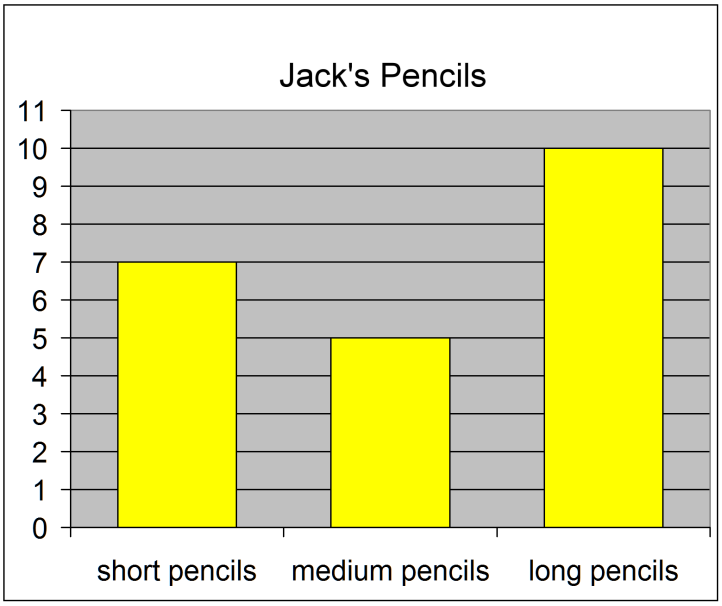
Bar Graphs

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?

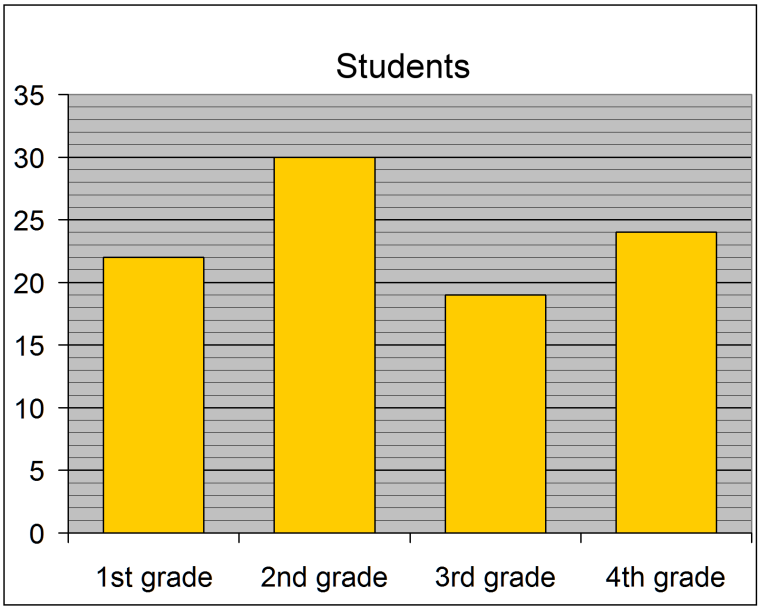
   d. How many more long pencils does he have than short ones?

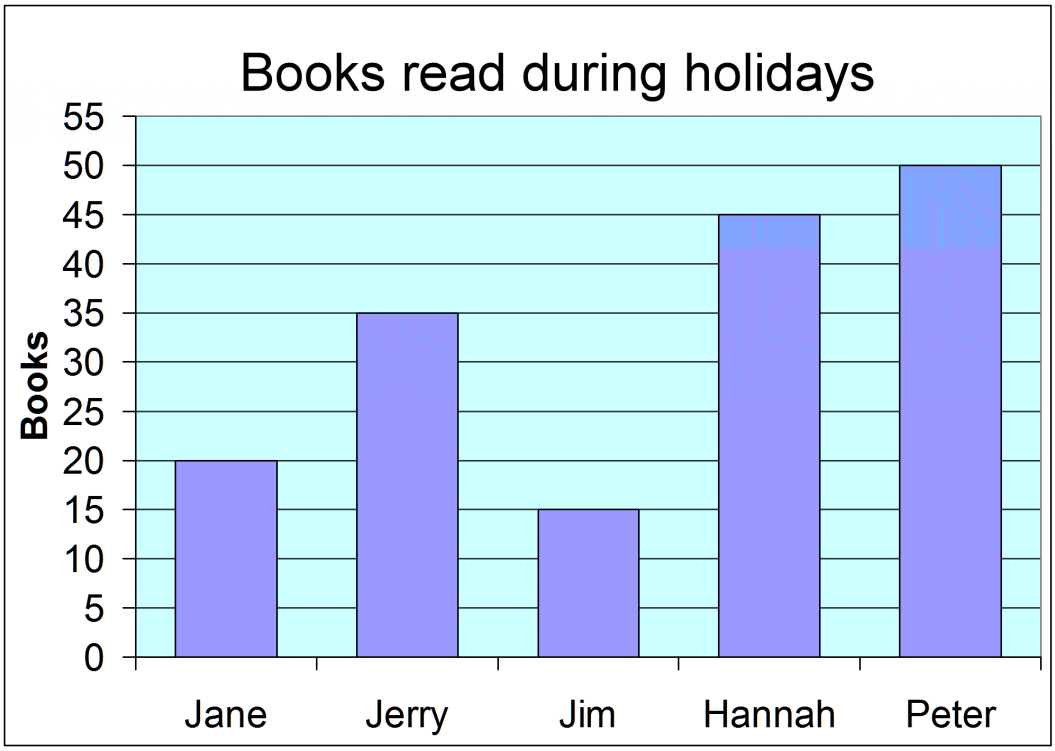
2. Here, the bar for first grade students reaches two little lines past 20. That's 22 students.

   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.

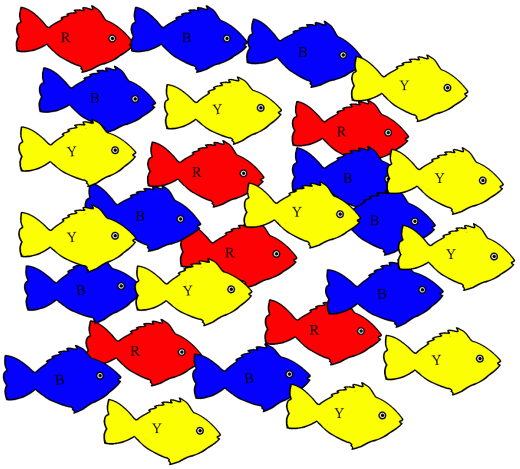
𝍸 |	𝍸 𝍸 | |	𝍸 𝍸 𝍸 | | | |	𝍸 𝍸 𝍸 𝍸 | | |
a. _____	**b.** _____	**c.** _____	**d.** _____

2. Draw tally marks for these numbers.

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

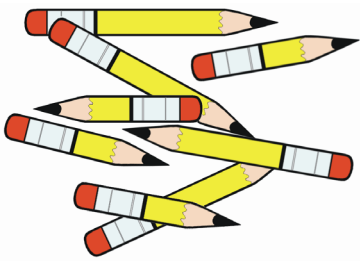
3. Count the fish. Use tally marks to keep track. Mark each fish you count and make a tally mark for it. That way you will not count the same fish twice. Then write the number under "Count".

	Tally Marks	Count
Red		
Blue		
Yellow		

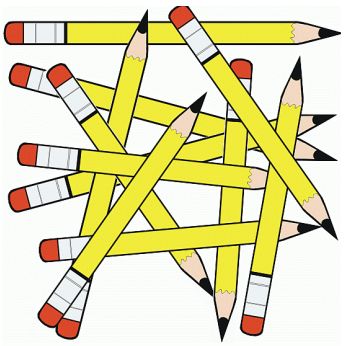


4. Count the pencils in each group. Use tally marks to keep track. Mark each pencil as you count it, and make a tally mark in the box. That way you won't count the same pencil twice.

GROUP 1:



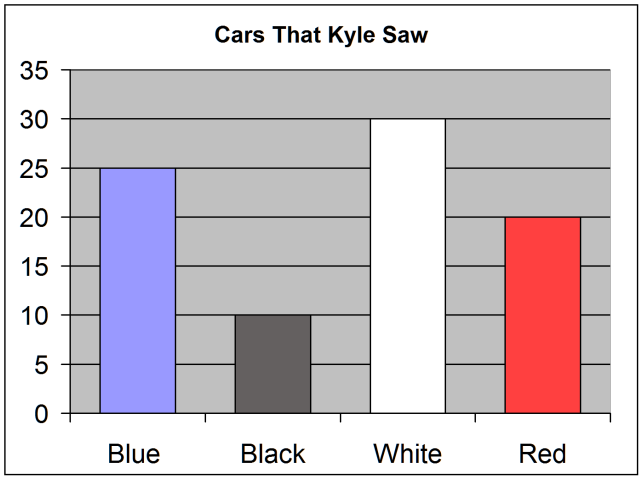
GROUP 2:



	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 at a slow pace, for example, when watching and counting birds. For this project, count something using tally marks. For example, go outside and count how many red cars you see in 20 minutes. Or, have someone bring you pencils a few at a time (pretend that pencils are logs being cut).

	Tally Marks	Count
Group 1		
Group 2		

Revision

1. Name the numbers using numbers and words.

a. 1 ten 5 ones *15* _____

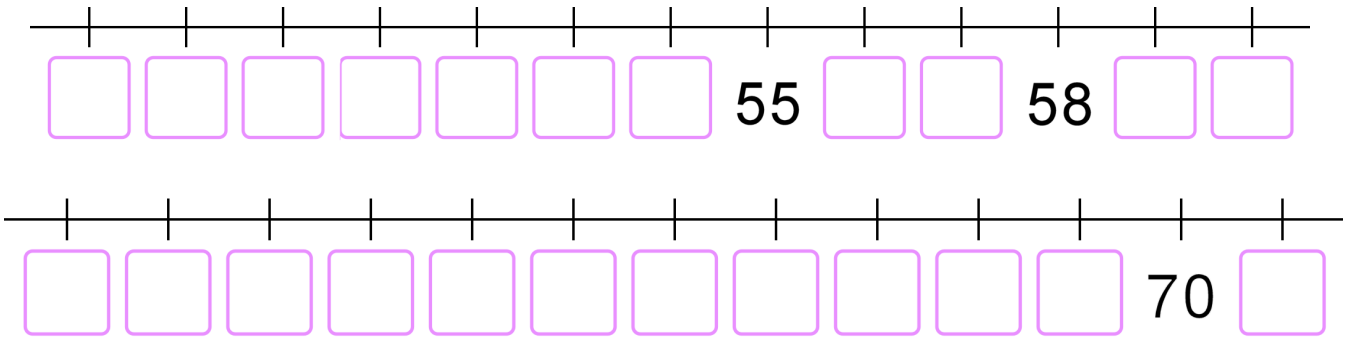
b. 6 tens 7 ones _____ _____

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 do this saying the numbers aloud with your teacher.

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

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

5. Break up the numbers into tens and ones.

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