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Introduction

Math Mammoth Subtraction 1 is a worktext that covers a lot of ground. The first part of the book covers the concept of subtraction, the relationship between addition and subtraction, and the various meanings of subtraction. The latter part focuses on memorizing the basic addition and subtraction facts and on word problems.

Part 1

The first lesson, *Basic Subtraction*, reviews the basic meaning of subtraction as “taking away.” The student writes subtraction equations from illustrations, and solves subtraction problems by drawing dots and crossing out some of them.

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 student 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 their own speech.

The next two lessons have to do with subtracting on the number line and counting down to subtract. Counting down is a transitional strategy for subtraction, because later students will learn more efficient ways, 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 student 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 student 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 do not involve the idea of taking away but have two parts making up a total. For example, if there are 10 flowers of which some are white and some are red, 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 $7 + \underline{\quad} = 10$. 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.

In the three lessons covering *How Many More?* students find how many more or how many fewer objects one person has than the other by drawing the objects. These lessons can easily be done with manipulatives if desired.

In the next lesson, *Differences*, we continue the theme, this time writing a missing addend addition for problems that ask “how many more” using a number line to help us see the difference between numbers.

The first part of the book ends with a review lesson.

Part 2

The second part provides lots of practice for learning and memorizing the basic addition and subtraction facts with numbers from 0 to 10.

Each of the lessons titled *Addition and Subtraction Facts with...* approaches the fact memorization from the concept of *fact families*, which makes the process logical and structured. For example, we study the fact families where the sum is 7, all in one lesson. This means the different sums that make seven ($0 + 7$, $1 + 6$, $2 + 5$, $3 + 4$) and their corresponding subtraction facts are practiced together.

Many students may not need all the practice problems provided, so don't assign all of them by default. Use your judgment, and only assign a certain portion, such as half of them, at first. (The rest of them can be used later as a review.) Adjust as necessary.

Alongside the lessons, you can use math games and/or flashcards to reinforce the facts. You will find a list of some games below.

Mathematics builds upon previously learned concepts and facts, and learning addition and subtraction facts is very important for later study, such as when students learn to add a two-digit number and a single digit number (e.g. $24 + 5$, in chapter 8).

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

At the following link, you will find videos that match the lessons in this book:

https://www.mathmammoth.com/videos/addition_subtraction

Besides the written problems, I encourage you to use the games listed on the following pages. Children like to play, and using the addition and subtraction facts in a game gives them fun and education in the same “package”.

I hope you find this book helpful in teaching math!

Maria Miller, the author

Math Talks

I invite you to take a look at these math-inspired real-life photographs. Use them to have short conversations with your student(s) about how we can see math in real life, with no pressure to get any “right answer.”

<https://www.mathmammoth.com/MathTalks>

Each photo has a connection to some simple math concept, such as counting, addition, or shapes. Many times, you can find several math concepts in it, such as both addition and subtraction, or both squares and multiplication. But there is no obligation to find all the possibilities. The idea is just to have a relaxed time, sharing one's thoughts and listening to others' ideas.

To help the child get started, you can ask, “What do you notice? What do you wonder?” Another great way to use the photos is to ask the child or students to make a story about the photo that uses numbers or math in some way.

I suggest you have a “math talk” a few times a week. It should only take a few minutes. Soon you will start noticing opportunities for such talks in your life, also! Just point out to your child or students objects in life that relate to math in some way, or ask them to make a math story of some scene. If your child has access to a camera, you can also ask them to take “math talk” photos themselves.

Sample worksheet from
<https://www.mathmammoth.com>

Basic Subtraction

From five bananas
we take away three.
(Cover three bananas.)




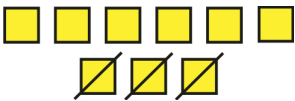
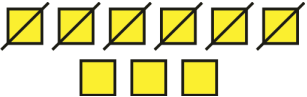
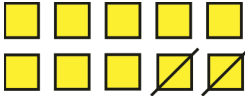


$$5 - 3 = 2$$

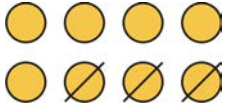
There are two left.

Five minus three equals two.

1. Write a subtraction sentence to match each picture.

 <p>a. $\underline{5} - \underline{1} = \underline{\quad}$</p>	 <p>b. $\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>
 <p>c. $\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>	 <p>d. $\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>
 <p>e. $\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>	 <p>f. $\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>

2. Solve. Draw dots and cross out some of them to match the subtraction problem.

 <p>a. $8 - 3 = \underline{\quad}$</p>	<p>b. $5 - 1 = \underline{\quad}$</p>	<p>c. $10 - 7 = \underline{\quad}$</p>
<p>d. $9 - 5 = \underline{\quad}$</p>	<p>e. $10 - 4 = \underline{\quad}$</p>	<p>f. $8 - 6 = \underline{\quad}$</p>

3. Solve. You can draw dots to help you.

a. $7 - 2 = \underline{\quad}$	b. $10 - 1 = \underline{\quad}$	c. $9 - 7 = \underline{\quad}$
d. $6 - 3 = \underline{\quad}$	e. $7 - 3 = \underline{\quad}$	f. $10 - 4 = \underline{\quad}$

4. Solve the problems.

a. There were seven birds in a tree. Three flew away. How many are left?	b. Mom has four silver plates in the cupboard and five on the table. How many does she have in all?
c. Five girls were jumping rope. Then four more came. How many girls are now jumping rope?	d. Tina had six bunches of flowers. She sold six of them. How many were left?

5. Compare. Write $<$, $>$, or $=$.

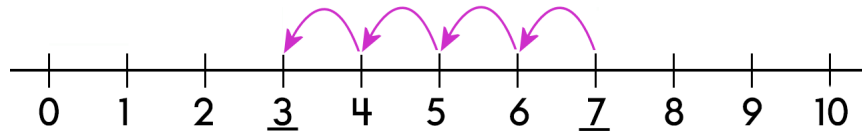
a. $2 + 6$ <input type="text"/> 9
$3 + 6$ <input type="text"/> 9
$4 + 6$ <input type="text"/> 9

b. $4 - 2$ <input type="text"/> 5
$3 - 1$ <input type="text"/> 3
$4 - 4$ <input type="text"/> 0

c. 10 <input type="text"/> $10 + 4$
10 <input type="text"/> $10 + 0$
10 <input type="text"/> $10 + 7$

Subtracting on the Number Line

Count 4 steps backwards from 7. You end up at 3.

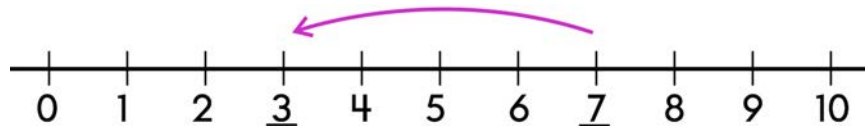


$$7 - 4 = 3$$

“Seven” “Six, five, four, three.”

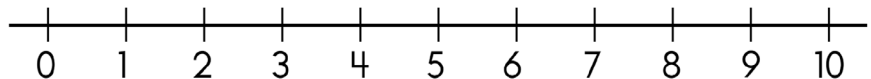
Start. Count down FOUR steps.

You can also use a single arrow:

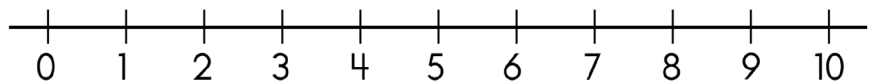


1. Draw a single arrow or several little steps to illustrate each subtraction, and solve.

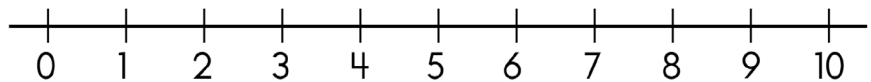
a. $7 - 2 =$ _____



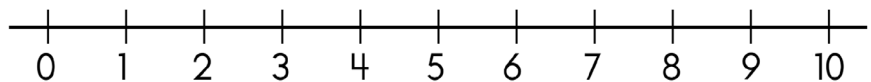
b. $8 - 4 =$ _____



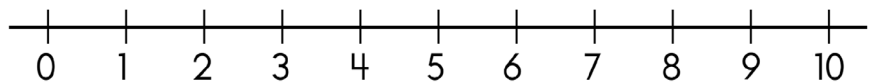
c. $6 - 5 =$ _____



d. $9 - 3 =$ _____



e. $10 - 3 =$ _____



Count Down to Subtract

To subtract without any pictures or objects, you can count down in your head. Count down as many steps as what you need to subtract.

$$8 - 3 = 5$$

“Eight” “Seven, six, five.”
Start. Count down THREE steps.

$$10 - 2 = 8$$

“Ten” “Nine, eight.”
Start. Count down TWO steps.

1. Write the two previous numbers.

a. _____, _____, 7 b. _____, _____, 4 c. _____, _____, 10

d. _____, _____, 6 e. _____, _____, 2 f. _____, _____, 8

2. Subtract one. The answer is just the previous number!

a. $6 - 1 =$ _____

b. $10 - 1 =$ _____

c. $9 - 1 =$ _____

$8 - 1 =$ _____

$7 - 1 =$ _____

$3 - 1 =$ _____

3. Subtract 2 or 3. You can count down. Compare the problems.

a.

$$6 - 2 = \underline{\quad}$$

$$6 - 3 = \underline{\quad}$$

b.

$$9 - 2 = \underline{\quad}$$

$$9 - 3 = \underline{\quad}$$

c.

$$7 - 2 = \underline{\quad}$$

$$7 - 3 = \underline{\quad}$$

d.

$$10 - 2 = \underline{\quad}$$

$$10 - 3 = \underline{\quad}$$

e.

$$5 - 2 = \underline{\quad}$$

$$5 - 3 = \underline{\quad}$$

f.

$$8 - 2 = \underline{\quad}$$

$$8 - 3 = \underline{\quad}$$

Subtraction and Addition in the Same Picture

Example 1.

Let's add the colored and the white circles:



$$4 + 6 = 10$$

Now *cover* the four colored circles.

We can write this subtraction:

$$10 - 4 = 6$$

Example 2.

There are seven circles in total:



$$3 + 4 = 7$$

Cover the three colored circles.

We can write this subtraction:

$$7 - 3 = 4$$

1. Write an addition sentence. Then cover the *colored* things, and write a subtraction sentence.



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

$$7 - \underline{\quad} = \underline{\quad}$$



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

$$6 - \underline{\quad} = \underline{\quad}$$



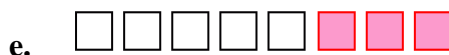
$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$



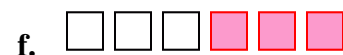
$$\underline{\quad} + \underline{\quad} = \underline{\quad}$$

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$



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

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$



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

$$\underline{\quad} - \underline{\quad} = \underline{\quad}$$

Equations

An **equation** has an **equals sign**, and something (numbers, symbols) on both sides of it. Here are some equations:

$5 = 5$

$2 = 5 - 3$

$3 + 4 = 7$

$1 + 2 = 2 + 1$

This equation is **false**: $5 = 6$ Five does not equal six!

This equation is **true**: $1 = 4 - 3$ One *is* equal to four minus three.

1. Are these equations true or false? Circle the correct word.

a. $9 - 2 = 7$ true *or* false

b. $2 = 6$ true *or* false

c. $7 - 1 = 8$ true *or* false

d. $10 - 8 = 1$ true *or* false

e. $4 = 2 + 2$ true *or* false

f. $2 = 6 - 3$ true *or* false

g. $12 = 12$ true *or* false

h. $10 = 5 + 5$ true *or* false

2. Write one false equation and one true equation.

False equation:

True equation:

3. Choose two “math notes” or stickers that are equal in value. Then write an equation, using them and an equals sign. See the example. (Note: there are always two ways you can write the equation: what is on the right and left sides of the equals sign can be flipped.)

a. $5 + 1$ 8 6

Equation: $6 = 5 + 1$

b. 5 $2 + 2$ $1 + 3$

Equation: $\quad =$

c. $4 + 3$ $5 + 2$ 6


Equation: $\quad =$


d. 10 $4 + 6$ $4 + 5$


Equation: $\quad =$


Addition and Subtraction Facts with 7

1. Complete the fact families with 7. At the top, write the three numbers you are using.

7, 0, 7

$7 + 0 = 7$ $\underline{\quad} + \underline{\quad} = 7$ $7 - \underline{\quad} = \underline{\quad}$ $7 - \underline{\quad} = \underline{\quad}$

____, ____, 7

$6 + \underline{\quad} = 7$ $\underline{\quad} + \underline{\quad} = 7$ $7 - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$

____, ____, 7

$5 + \underline{\quad} = 7$ $\underline{\quad} + \underline{\quad} = 7$ $7 - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$

____, ____, 7

$4 + \underline{\quad} = 7$ $\underline{\quad} + \underline{\quad} = 7$ $7 - \underline{\quad} = \underline{\quad}$ $\underline{\quad} - \underline{\quad} = \underline{\quad}$

2. Write down the numbers that add up to 7 and memorize the addition facts!

$0 + \underline{\quad} = 7$	or	$\underline{\quad} + 0 = 7$
$1 + \underline{\quad} = 7$	or	$\underline{\quad} + 1 = 7$
$2 + \underline{\quad} = 7$	or	$\underline{\quad} + 2 = 7$
$3 + \underline{\quad} = 7$	or	$\underline{\quad} + 3 = 7$

3. Play the “7 Out” card game (see the chapter introduction).

4. Subtract.

a.
$$\begin{array}{r} 7 \\ - 5 \\ \hline \end{array}$$

b.
$$\begin{array}{r} 7 \\ - 4 \\ \hline \end{array}$$

c.
$$\begin{array}{r} 7 \\ - 6 \\ \hline \end{array}$$

d.
$$\begin{array}{r} 7 \\ - 2 \\ \hline \end{array}$$

e.
$$\begin{array}{r} 7 \\ - 1 \\ \hline \end{array}$$

f.
$$\begin{array}{r} 7 \\ - 3 \\ \hline \end{array}$$

5. Solve.

a. Luis has four pencils. Jeremy has two more than Luis.
How many pencils does Jeremy have?

How many pencils do the two boys have altogether?

b. Maria found two socks in the hamper, five socks in her basket,
and one sock on the floor. How many socks did she find?

6. Fill in. Then draw a line between the facts that are from the same fact family.

$5 + \underline{\quad} = 7$
 $7 - 0 = \underline{\quad}$
 $7 - 3 = \underline{\quad}$
 $7 - \underline{6} = 1$

$7 - \underline{\quad} = 4$
 $6 + \underline{1} = 7$
 $7 - 2 = \underline{\quad}$
 $0 + \underline{\quad} = 7$

$7 - \underline{1} = 6$
 $\underline{\quad} + 4 = 7$
 $7 - \underline{\quad} = 7$
 $7 - \underline{\quad} = 2$

Puzzle Corner

Figure out how to fill in the rest of this subtraction table.

-	12	11	10	9	8	7	6	5	4	3
1	11					6				
2		9					4			1