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Chapter 1: Addition and Subtraction
Introduction

This first chapter of *Math Mammoth Grade 3* focuses on mental math, word problems, and patterns.

The beginning lessons give a review of basic addition and subtraction facts, plus a review of some mental math strategies from second grade, so that even students who perhaps did not study mental math in earlier grades can now catch up. The rest of the lessons have to do with third grade topics (word problems, patterns).

Students practice writing an equation with an unknown for two-step word problems. This is a challenging topic that will be practiced throughout several chapters. In this chapter, the problems include only additions and subtractions. Later in third grade, the problems will also include multiplication and division. Students continue with this topic in fourth grade when they work on multi-step word problems in the same manner, and their work here is foundational to writing equations to solve problems and to model situations with mathematics in all grade levels, including in algebra.

The lessons on the concept of difference and on the connection between addition and subtraction have to do with algebraic thinking, and are also intended to help students with writing equations for the word problems.

Please see the user guide in the beginning of the worktext or at **https://www.mathmammoth.com/userguides/** for more guidance on using and pacing the curriculum.

Keep in mind the free videos that match the curriculum at **https://www.mathmammoth.com/videos/.**

Good Mathematical Practices

- Sometimes an elementary math problem is better solved with mental math, and sometimes with paper and pencil calculations. This chapter focuses on mental math, enabling students to use it as an efficient tool in many future math problems.
- One focus of this chapter is word problems and writing an equation with an unknown for them. This can be challenging to students, but it is also a wonderful opportunity for them to learn to persevere in solving problems — an essential skill in everyday life. Mention to them that mistakes are not bad because that is when you truly learn. Explain to them that your brain literally grows when you think about and analyze a mistake you made. In the same vein, make sure you as the teacher or parent do not put mistakes down in any manner, but treat them as something valuable.
- The lesson *Patterns* gives students opportunities to look for structure and patterns, which are foundational activities in mathematics.

Pacing Suggestion for Chapter 1

This table does not include the chapter test as it is found in a different book (or file).
Please add one day to the pacing for the test if you use it.

The Lessons in Chapter 1	page	span	suggested pacing	your pacing
Addition Facts Review (optional)	16	*3 pages*	1 day	
Mental Addition	19	*2 pages*	1 day	
Review: Subtraction Facts (optional)	21	*2 pages*	1 day	
Subtraction Strategies, Part 1	23	*2 pages*	1 day	
Subtraction Strategies, Part 2	25	*2 pages*	1 day	
The Concept of Difference	27	*3 pages*	1 day	
Mental Math with Three-Digit Numbers	30	*2 pages*	1 day	

A Letter for the Unknown 1	32	*2 pages*	1 day
The Connection with Addition and Subtraction	34	*2 pages*	1 day
A Letter for the Unknown 2	36	*2 pages*	1 day
Patterns	38	*2 pages*	1 day
Review Chapter 1	40	*2 pages*	1 day
Chapter 1 Test (optional)			
TOTALS		*21 pages*	10 days
with optional content		*(26 pages)*	(12 days)

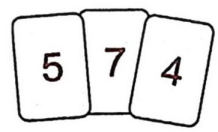
Games and Activities

The Lowest Sum

You need: Number cards with numbers from 2 to 9, preferably at least four copies of each card. A standard deck of cards from which all the aces, face cards, and jokers have been removed is one possibility.

Game play: Shuffle the cards. In each round, deal three cards to each player. Each player will then form one TWO-digit number and one SINGLE-digit number using the three cards, and will calculate the sum of those mentally. The goal is to make this sum to be as small as possible.

For example, let's say you get the cards 5, 7, and 4. You could make these sums: 57 + 4, 45 + 7, 47 + 5, and a few others. But choose the smallest sum!



Each player will say their sum aloud. The person with the smallest sum will win all the cards (from all players) used in that round, and puts them into their personal pile.

Continue with the next round by dealing another three cards to each player.

Once you cannot deal three cards to each player, the game is over. The person with MOST cards in their personal pile is the winner.

Variations

1. On each round, each player is allowed to discard ONE of their cards and to draw a new one to replace it, from the deck.
2. Players try to make the largest sum possible, instead of the smallest.
3. Use four cards, and make two 2-digit numbers.
4. Use four cards, and make one 3-digit and one single-digit number.
5. Use five cards, and make one 3-digit and one 2-digit number.
6. Write down each sum of each round, and add those together, to get a final score for each player. The player with the smallest final sum wins.

11-Out Go Fish

This game practices the sums of 11 — in other words, addition problems with an answer of 11, such as 3 + 8 and 7 + 4. You can also play it with the sums of 12, 13, or 14.

You need: Number cards with numbers from 2 to 9, preferably at least four copies of each card. A standard deck of cards from which all the aces, face cards, and jokers have been removed is one possibility.

Game play: Deal six cards to each player. The remaining cards are placed in the middle of the table, spread out with faces down as a "pond".

During your turn, if two cards in your hand add up to 11, remove them from your hand and put them into your personal pile. Then, you may ask the player on your left for a specific card, such as "Do you have a 3?" If that player does have it, they have to give it to you. If you now have a pair of cards that make 11 (you should, if you asked wisely!), discard them in your personal pile. You will then ask this player again for a specific card. If they have it, they have to give it to you. Continue like this until the player on your left does not have the card for which you ask. They will then say, "Go fish", and you pick a card from the pond.

If, after picking a card from the pond, two cards in your hand add up to 11, you place those into your personal pile also. Then your turn ends.

The Smallest Difference

You need: Number cards with numbers from 2 to 9, preferably at least four copies of each card. For example, you can use a standard deck of cards from which all the aces, face cards, and jokers have been removed.

Game play: Shuffle the cards. In each round, deal three cards to each player. Each player will then form one TWO-digit number and one SINGLE-digit number using the three cards, and will subtract the smaller number from the bigger. The goal is to make this difference to be as small as possible.

For example, let's say you get the cards 2, 3, and 8. You could make these differences:
23 − 8, 83 − 2, 32 − 8, and a few others. But choose the smallest one!

Each player will say their answer aloud. The person with the SMALLEST one will then win all the cards (from all players) used in that round, and put them into their personal pile.

Continue with the next round by dealing another three cards to each player.

Once you cannot deal three cards to each player, the game is over. The person with MOST cards in their personal pile is the winner.

Variations

1. During each round, each player is allowed to discard ONE of their cards and to draw a new one to replace it, from the deck.
2. Players try to make the largest possible difference, instead of the smallest.
3. Use four cards, and make two 2-digit numbers.
4. Use four cards, and make one 3-digit and one single-digit number.
5. Use five cards, and make one 3-digit and one 2-digit number.
6. Write down the result of each round, and add those together, to get a final score for each player. The player with the smallest final sum wins.

5-Card Draw to a Target

You need: Number cards from 0 through 9 or from 1 through 9. (Standard playing cards work if you make, say, the ten to be zero.) Use several decks if you have more than two players.

Game play: Choose a 2-digit target number between 60 and 120, say 70. Each player takes five cards from the deck, and uses those to form two 2-digit numbers to add (one card is left unused). Each player adds the two numbers they formed, using mental math. The player closest to the target wins the cards used on that round.

The player with the most cards after, say, five rounds, wins.

*This game is adapted from **https://www.earlyfamilymath.org** and published here with permission.*

Games and Activities at Math Mammoth Practice Zone

Basic Addition & Subtraction Facts — Online practice
Simple online practice for basic addition and subtraction facts, including missing number problems. Further options for addition only include: adding with zero, doubles, doubles plus one, nine trick (or adding with 9), and the eight-trick (or adding with 8).
https://www.mathmammoth.com/practice/addition-single-digit

Two-Digit Addition & Subtraction with Mental Math
Online practice for two-digit addition and subtraction (such as $78 + 6$, $40 + 15$, $54 + 22$, $29 + 37$, $59 - 4$, $100 - 28$, etc.).
https://www.mathmammoth.com/practice/addition-subtraction-two-digit

Addition & Subtraction Fact Families — Online practice
Online practice for the basic addition and subtraction facts using the fact families approach.
https://www.mathmammoth.com/practice/fact-families

Hidden Picture Addition Game
Use a number range of 2 to 9 to practice basic addition facts. Use a range of 10 to 99 to practice two-digit mental addition.
https://www.mathmammoth.com/practice/mystery-picture

7 Up Card Game
You will see seven cards dealt face up. Choose any two cards that make 10 (or your chosen sum) to discard. When there are no cards that make that sum, click the deck to deal more cards. For this chapter, I suggest using sums of 11, 12, 13, and 14.
https://www.mathmammoth.com/practice/seven-up

Mathy's Berry Picking Adventure
Join Mathy, our mammoth mascot, on his berry-picking adventure, and practice three-digit mental addition and subtraction!
https://www.mathmammoth.com/practice/mathy-berries#mode=td-plus-mult-100,td-minus-mult-100,mult-100-minus-td-mult-10,mult-100-minus-td&duration=2m

Choose other options: https://www.mathmammoth.com/practice/mathy-berries

Bingo
Click on the right answer in the grid, and it will be colored green. Once you get five in a row, a column, or diagonally, BINGO, you win! For this chapter, choose from any of the addition and subtraction options.
https://www.mathmammoth.com/practice/bingo

Make Number Sentences
You're given numbers (in flowers), and an answer to a math sentence. Drag two flowers to the empty slots so that the math sentence is true. For this chapter, use a variety of number ranges to practice single-digit, double-digit, and triple-digit additions and subtractions.
https://www.mathmammoth.com/practice/number-sentences

Fruity Math
Click the fruit with the correct answer and try to get as many points as you can within two minutes. This game covers addition and subtraction, advancing from single-digit to three-digit. You can also use the manual mode to set it up for specific kinds of additions or subtractions.
https://www.mathmammoth.com/practice/fruity-math

Helpful Resources on the Internet

We have compiled a list of Internet resources that match the topics in this chapter, including pages that offer:

- **online practice** for concepts;
- online **games**, or occasionally, printable games;
- **animations** and interactive **illustrations** of math concepts;
- **articles** that teach a math concept.

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

https://l.mathmammoth.com/2024/gr3ch1



Addition Facts Review

9-trick	**8-trick**
Nine wants to be 10, so it takes "one" from the other number! The other number becomes one less. 7 + 9 ↓ ↓ 6 + 10 = 16	Eight wants to be 10, so it takes "two" from the other number! The other number becomes two less. 5 + 8 ↓ ↓ 3 + 10 = 13

1. Point to the problems and think of the answer. Practice several times! If you don't have these memorized, use the tricks above.

a.	b.	c.	d.
6 + 9	9 + 4	5 + 8	8 + 4
8 + 9	9 + 6	3 + 8	8 + 7
5 + 9	9 + 2	6 + 8	8 + 9
3 + 9	9 + 9	8 + 8	8 + 5

The doubles		**Doubles plus 1**	
Cover the answers, and practice memorizing the answers.		These facts are just one more than a doubles fact! Can you quickly tell each answer? Point to the problems, and practice.	
2 + 2 = 4	**6 + 6 = 12**	2 + 3	6 + 7
3 + 3 = 6	**7 + 7 = 14**	3 + 4	7 + 8
4 + 4 = 8	**8 + 8 = 16**	4 + 5	8 + 9
5 + 5 = 10	**9 + 9 = 18**	5 + 6	9 + 10

You can use addition facts to solve other addition problems. **Compare:**	
$5 + 6 = 11$ $35 + 6 = 41$ 5 + 6 is one more than 10, so, 35 + 6 is one more than the *next* ten (40)	$8 + 5 = 13$ $78 + 5 = 83$ 8 + 5 is three more than 10, so, 78 + 5 is three more than the *next* ten (80)

2. Add.

a.	**b.**	**c.**
$8 + 7 =$ _____	$9 + 9 =$ _____	$4 + 8 =$ _____
$18 + 7 =$ _____	$29 + 9 =$ _____	$34 + 8 =$ _____
$58 + 7 =$ _____	$69 + 9 =$ _____	$64 + 8 =$ _____

3. Add. Think of the easier problem (with single digits) in your mind.

a. $26 + 7 =$ _____ **b.** $74 + 9 =$ _____ **c.** $68 + 8 =$ _____

d. $58 + 5 =$ _____ **e.** $24 + 8 =$ _____ **f.** $49 + 7 =$ _____

4. Draw a line to connect each problem to its answer.

$29 +$ _____ $= 36$	**7**	$86 +$ _____ $= 96$
$66 +$ _____ $= 76$	**10**	$46 +$ _____ $= 56$
$48 +$ _____ $= 56$	**9**	$57 +$ _____ $= 66$
$50 +$ _____ $= 56$	**6**	$38 +$ _____ $= 46$
$87 +$ _____ $= 96$	**8**	$89 +$ _____ $= 96$
$70 +$ _____ $= 76$		$39 +$ _____ $= 46$
$68 +$ _____ $= 76$		$77 +$ _____ $= 86$

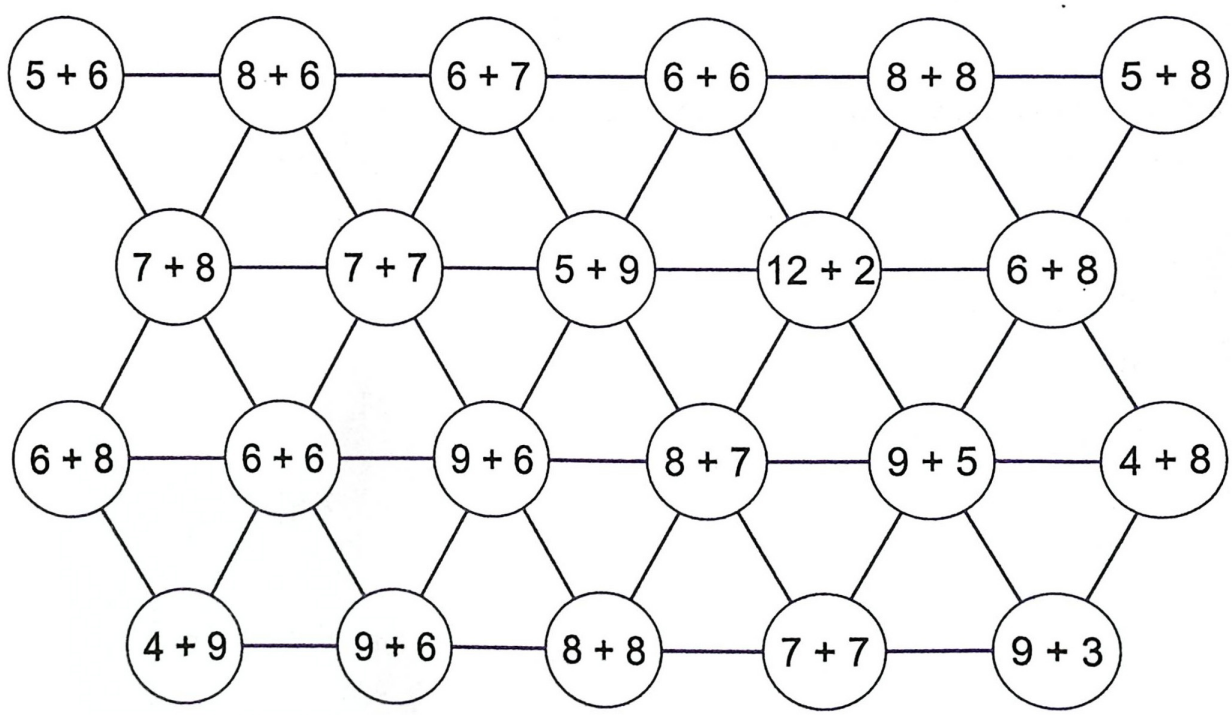
5. Add the same number each time (repeatedly).

a. Add 20.	**b.** Add 40.	**c.** Add 15.	**d.** Add 25.
20	*40*	*15*	*25*
40	*80*	*30*	*50*

6. Play the **Lowest Sum** game. (See the chapter introduction.)

7. Play the **11-Out Go Fish** game. (See the chapter introduction.) Play it also as 12-Out Go Fish and 13-Out Go Fish.

8. Island hopping puzzle! Find a path from the top to the bottom that connects islands with the same answer. *This puzzle is adapted from* ***https://www.earlyfamilymath.org*** *and published here with permission.*



Mental Addition

Break numbers into parts to make adding easier:	30 + 28 / \ 30 + 20 + 8 = _____	12 + 60 / \ 2 + 10 + 60 = _____

1. Break one of the numbers into its tens and ones. Then add using mental math.

a. 50 + 14 = *50 + 10 + 4 = 64*	**b.** 80 + 11	**c.** 50 + 39
d. 35 + 60	**e.** 10 + 5 + 21	**f.** 29 + 40 + 30

2. Add the tens and the ones separately. Look at the example.

a. 36 + 22 = **30 + 20 + 6 + 2** =	**b.** 72 + 18 = **70 + 10 + 2 + 8** =	**c.** 54 + 37
d. 24 + 55	**e.** 36 + 36	**f.** 42 + 68

3. Play the **5-Card Draw to the Target** game. (See the chapter introduction.)

4. Find the easiest order to add! You can break numbers into parts and add part-by-part.

a. 20 + 40 + 2 + 7
= _____

b. 30 + 50 + 8 + 2
= _____

c. 40 + 60 + 4 + 3
= _____

d. 10 + 12 + 7 + 3
= _____

e. 52 + 4 + 30 + 3
= _____

f. 78 + 10 + 2 + 20
= _____