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Foreword

Math Mammoth Grade 2 comprises a complete math curriculum for the second grade mathematics studies. The curriculum meets and exceeds the Common Core standards.

The main areas of study for second grade are:

1. Understanding of the base-ten system within 1000. This includes place value with three-digit numbers, skip-counting in fives, tens, and multiples of hundreds, tens, and ones (within 1000) (chapters 6 and 8);
2. Develop fluency with addition and subtraction, including solving word problems, regrouping in addition, and regrouping in subtraction (chapters 1, 3, 4, and 8);
3. Using standard units of measure (chapter 7);
4. Describing and analyzing shapes (chapter 5).

Additional topics we study are time, money, introduction to multiplication, and bar graphs and picture graphs.

This book, 2-A, covers reading the clock (chapter 2), the basic addition and subtraction facts within 18 (chapter 3), regrouping in addition (chapter 4), and geometry (chapter 5). The rest of the topics are covered in the 2-B student worktext.

Some important points to keep in mind when using the curriculum:

- These two books (parts A and B) 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 sections on shapes, measurement, clock, and money in any order you like.

  This is especially advisable if your child is either "stuck" or is perhaps getting bored with some topic. Sometimes the concept the child was stuck on can become clear after a break from the topic.

- Math Mammoth is mastery-based, which means it concentrates on a few major topics at a time, in order to study them in depth. However, you can still use it in a *spiral* manner, if you prefer. Simply have your child study in 2-3 chapters simultaneously. This type of flexible use of the curriculum enables you to truly individualize the instruction for your child.

- Don't automatically assign all the exercises. Use your judgment, trying to assign just enough for your child's needs. You can use the skipped exercises later for review. For most children, I recommend to start out by assigning about half of the available exercises. Adjust as necessary.

- For review, the curriculum includes a worksheet maker (Internet access required), mixed review lessons, additional cumulative review lessons, and the word problems continually require usage of past concepts. Please see more information about review (and other topics) in the FAQ at **https://www.mathmammoth.com/faq-lightblue.php**

I heartily recommend that you view the full user guide for your grade level, available at **https://www.mathmammoth.com/userguides/**

Lastly, you can find free videos matched to the curriculum at **https://www.mathmammoth.com/videos/**

I wish you success in teaching math!

Maria Miller, the author

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Chapter 1: Some Old, Some New
Introduction

This chapter contains both some review and some new topics, with the aim of giving children a good start in second grade math.

In the first few lessons, we review adding and subtracting two-digit numbers, and skip-counting using the 100-chart, from first grade. Next, the lesson *Fact Families* reviews the connection between addition and subtraction, and introduces a new strategy for missing subtrahend problems (such as ___ − 5 = 4). In these problems, the child can *add* to find the missing total. This actually teaches them algebraic thinking.

Then we go on to the "new", starting with ordinal numbers, which are probably familiar from everyday language. Even and odd numbers are presented in the context of equal sharing: if you can share that many objects evenly (equally), then the number is even. Use manipulatives here if desired.

Then we study doubling and halving. Don't skip the word problems included in these lessons; they are important. Children need to learn to apply the concepts they have just learned. Also, if a child cannot solve word problems that involve doubling or halving, there is a chance they did not actually learn those concepts.

The last lessons have to do with adding and subtracting whole tens (multiples of ten) *mentally* (e.g. 51 + 30 or 72 − 40). Mental math is very important, because it builds number sense: the ability to manipulate numbers flexibly — to take them apart and put them together in various combinations. And number sense is very important: it actually predicts a student's success later on in algebra.

In this case, adding or subtracting multiples of ten is actually a concept rooted in place value. As long as the child understands place value (tens and ones), these types of problems are very easy. If your child has trouble, it is a sign they perhaps have not grasped place value with two-digit numbers.

Also, don't forget the free videos matched to the curriculum at **https://www.mathmammoth.com/videos/**.

Pacing Suggestion for Chapter 1

Please add one day to the pacing for the test if you will use it. Note that the lessons in the chapter can take several days to finish. As a general guideline, second graders should finish 1.5-2 pages daily or 8-10 pages a week. Please also see the user guide at https://www.mathmammoth.com/userguides/ .

The Lessons in Chapter 1	page	span	suggested pacing	your pacing
Some Review	10	*2 pages*	2 days	
The 100-Chart and More Review	12	*3 pages*	2 days	
Fact Families	15	*2 pages*	1 day	
Ordinal Numbers	17	*2 pages*	1 day	
Even and Odd Numbers	19	*2 pages*	1 day	
Doubling	21	*3 pages*	2 days	
One-Half	24	*2 pages*	2 days	
Adding with Whole Tens	26	*3 pages*	2 days	
Subtracting Whole Tens	29	*2 pages*	1 day	
Review Chapter 1	31	*2 pages*	2 days	
Chapter 1 Test (optional)				
TOTALS		*23 pages*	16 days	

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Games and Activities

Shuffle the Order

You need: Ten stuffed animals and a deck of number cards with numbers 1-10. Optionally: make a slide for the stuffed animals to slide down on.

Activity: Arrange the animals standing in a line, as if waiting for their turn to go on a slide. On your turn, draw two cards from the deck of number cards. The cards will act as ordinal numbers. The first card tells you which animal in line you will move, and the second card tells you to which position you move it to. For example, if you get 2 and 8, you will move the *second* animal to the *eighth* position in line.

After ten rounds, all the stuffed animals will go down the slide, *in order*.

Cover my Double

You need: One dice, two distinct kind of markers, such as pennies and dimes, or two kinds of beans. For a game board, draw a 4x4 grid with numbers 2, 4, 6, 8, 10, and 12 written multiple times.

4	2	10	8
8	4	8	12
6	12	10	6
2	6	4	8

Game Play: This is a game for two players. At your turn, throw the dice, and cover the double of what you get from the dice with one of your markers. Then it is the other player's turn. If the squares with your double are already covered, the turn passes to the other player. The winner is the person who first gets three of their markers in a row, or column, or diagonally.

Games and Activities at Math Mammoth Practice Zone

Hidden Picture Addition Game
Use a number range of 3 to 19, or some other, to practice addition.
https://www.mathmammoth.com/practice/mystery-picture

Hidden Picture Subtraction Game
Choose a number range of 2 to 18, for example, to practice subtraction in this fun game.
https://www.mathmammoth.com/practice/mystery-picture-subtraction

Two-Digit Mental Addition - Online Practice
Practice adding one two-digit number and one single-digit number without regrouping in this online quiz.
https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2p1dnr

Two-Digit Mental Subtraction - Online Practice
Practice subtracting a single-digit number from a two-digit number without regrouping in this online quiz.
https://www.mathmammoth.com/practice/addition-subtraction-two-digit#opts=2m1dnr

"7 Up" Card Game
You will see seven cards dealt face up. Simply 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, choose sums of 7, 8, 9, or 10.
https://www.mathmammoth.com/practice/seven-up

Skip-count in a 100-chart
Fill in numbers on a 100-chart in a specific skip-counting pattern. You can choose by which number to skip-count, and also the starting and ending numbers for the grid.
https://www.mathmammoth.com/practice/skip-count-hundred-chart

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Fact Families
Choose which fact family or families to practice, and the program will give you addition and subtraction problems from those, including with missing numbers.
https://www.mathmammoth.com/practice/fact-families

Even and Odd
Sort numbers into even and odd by dragging each kind of number to its own "box" in this simple game.
https://www.mathmammoth.com/practice/even-or-odd

Fruity Math: Subtraction
Add a two-digit number and a multiple of ten (such as 57 − 20). Click the fruit with the correct answer and try to get as many points as you can within two minutes.
https://www.mathmammoth.com/practice/fruity-math#op=subtraction&duration=120&mode=manual&config=21,99x1__1,9x10&allow-neg=0

Fruity Math: Addition
Add a two-digit number and a multiple of ten (such as 26 + 30). Click the fruit with the correct answer and try to get as many points as you can within two minutes.
https://www.mathmammoth.com/practice/fruity-math#op=addition&duration=120&mode=manual&config=1,90x10__11,80x1&max-sum=100

Further Resources on the Internet

These resources match the topics in this chapter, and offer online practice, online games (occasionally, printable games), and interactive illustrations of math concepts. We heartily recommend you take a look. Many people love using these resources to supplement the bookwork, to illustrate a concept better, and for some fun. Enjoy!

https://links.mathmammoth.com/gr2ch1

Scan me

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Fact Families

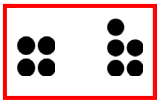
When two addition and two subtraction facts use the same numbers, it is called a "*fact family*."

Sometimes in a subtraction problem, the *total* is asked:

☐ − 8 = 20

You know 20 and 8 are the "parts," and the total is missing. To find the total, just add the "parts":

20 + 8 = *28*



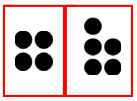
4 + 5 = 9

5 + 4 = 9

9 − 5 = 4

9 − 4 = 5

Notice the TOTAL. The subtraction sentences *start* with the total.



4 + 5 = 9

5 + 4 = 9

9 − 5 = 4

9 − 4 = 5

Notice the PARTS. The two parts make up the total.

1. Write two addition and two subtraction sentences—a fact family!

a.

____ + ____ = ____

____ + ____ = ____

____ − ____ = ____

____ − ____ = ____

b.

____ + ____ = ____

____ + ____ = ____

____ − ____ = ____

____ − ____ = ____

c.

____ + ____ = ____

____ + ____ = ____

____ − ____ = ____

____ − ____ = ____

2. Fill in the missing numbers. The four problems form a fact family.

a.

2 + ☐ = 8

☐ + 2 = 8

8 − 2 = ☐

8 − ☐ = 2

b.

____ + ____ = 10

____ + ____ = 10

10 − 7 = ☐

10 − ☐ = 7

c.

____ + ____ = ____

____ + ____ = ____

9 − ☐ = 6

____ − ____ = ____

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3. Write a matching addition for the subtraction. There are two possibilities.

a. ____ + ____ = ____ 8 − 2 = 6	**b.** ____ + ____ = ____ 20 − 7 = 13	**c.** ____ + ____ = ____ 60 − 20 = 40

When the first number is missing in a subtraction, it is the TOTAL that is missing.

You can find the TOTAL by adding the two numbers (those are the "parts").

$\square - 6 = 2$

The total is missing. 6 and 2 are the "parts." So we add them. 2 + 6 = 8. The missing number is 8!

It is like "adding backwards":

Add. (+)

$\boxed{8} - 6 = 2$

Add. (+)

$\boxed{23} - 3 = 20$

4. The total is missing from the subtraction sentence. Solve.

a. $\square - 5 = 4$	**b.** $\square - 7 = 2$	**c.** $\square - 7 = 10$

5. Find the missing numbers.

a. $\square - 2 = 4$ $\square - 50 = 50$ $\square - 8 = 20$	**b.** $\square - 7 = 80$ $60 + 4 = \square$ $16 + \square = 20$	**c.** $9 - \square = 5$ $77 + \square = 78$ $\square - 9 = 60$

Puzzle Corner

Find the missing numbers. This time adding backwards will NOT work!

a. $50 - \square = 10$ **b.** $100 - \square = 91$ **c.** $10 - \square - 2 = 1$

$33 - \square = 31$ $76 - \square = 72$ $9 - \square - 5 = 2$

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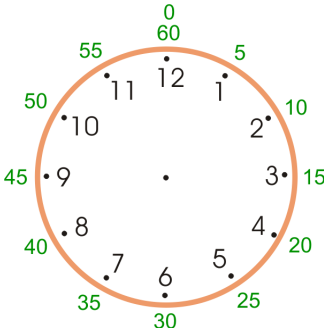
The Minutes

When the hour hand moves from one number to the next (from 1 to 2, or from 6 to 7, etc.), it takes one hour to do that.

In that same one hour of time, the *minute hand* travels **from 0 to 60 minutes**. So one hour is 60 minutes. A half-hour is 30 minutes.

When you read the minute hand, you use the green numbers (marked outside the clock face of the clock on the right). They go by fives, and are not normally marked on clocks. You need to know them. Just skip-count by fives!



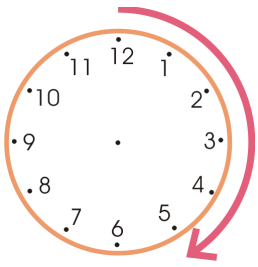
1 hour = 60 minutes.
1/2 hour = 30 minutes.

The hour hand is past 8.
The minute hand is at 15.
The time is 8:15.

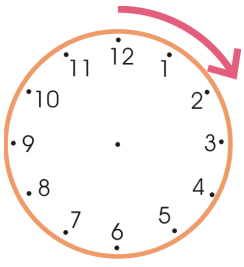
The hour hand is past 2.
The minute hand is at 25.
The time is 2:25.

The hour hand is past 11.
The minute hand is at 10.
The time is 11:10.

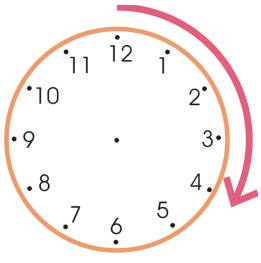
1. The arrow shows how much the minute hand travels. How many minutes pass?



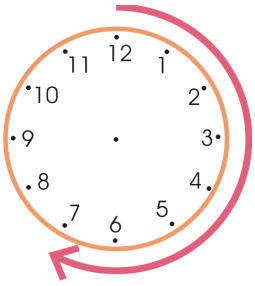
a. _____ minutes



b. _____ minutes



c. _____ minutes



d. _____ minutes

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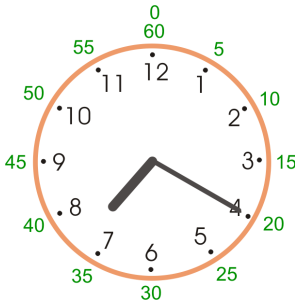
2. Write the time. This special clock shows the numbers for hours *and* for minutes.

a. _____ : _____

b. _____ : _____

c. _____ : _____

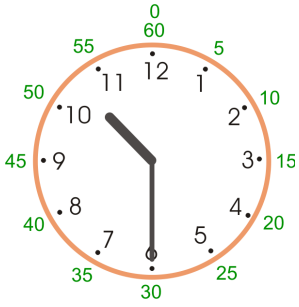


d. _____ : _____

e. _____ : _____

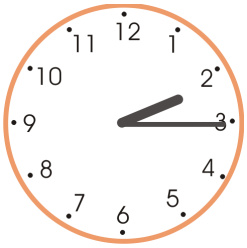
f. _____ : _____

g. _____ : _____



h. _____ : _____

3. Write the time using the normal clock. Remember, the numbers for the minute hand are not shown, and they go by fives!



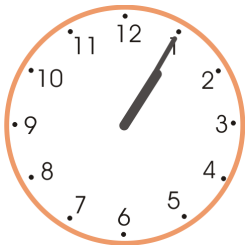
a. _____ : _____

b. _____ : _____

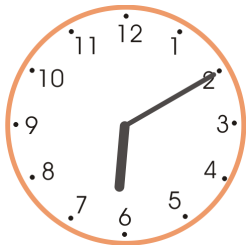
c. _____ : _____

d. _____ : _____

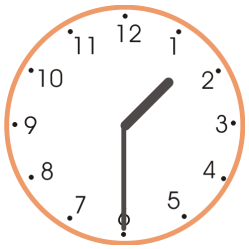
e. _____ : _____



f. _____ : _____



g. _____ : _____



h. _____ : _____

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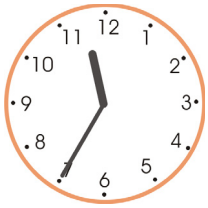
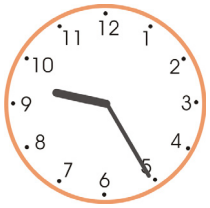
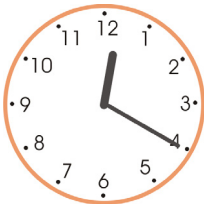
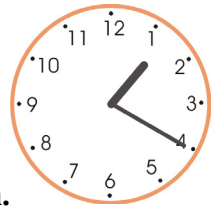
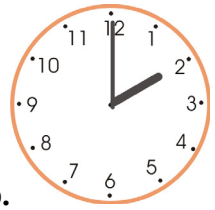
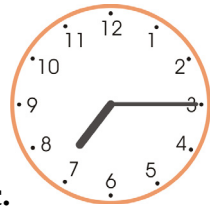
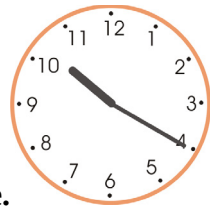
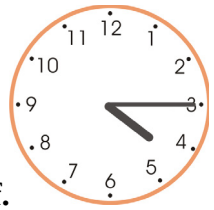
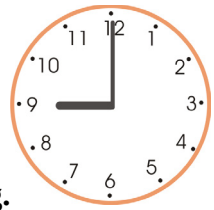
4. Find the clock that shows 11:25 and the clock that shows 11:05.

a.	**b.** 	**c.**	**d.**

5. Write the time.

a.  _____ : _____	**b.** _____ : _____	**c.**  _____ : _____	**d.** _____ : _____

6. Write the time that the clock shows, and the time 5 minutes later. Imagine the minute hand moving one "step" further. You can use your practice clock.

	a.  _____ : _____	**b.**  _____ : _____	**c.**  _____ : _____	**d.** _____ : _____
5 min. later →	_____ : _____	_____ : _____	_____ : _____	_____ : _____
	e.  _____ : _____	**f.**  _____ : _____	**g.**  _____ : _____	**h.** _____ : _____
5 min. later →	_____ : _____	_____ : _____	_____ : _____	_____ : _____

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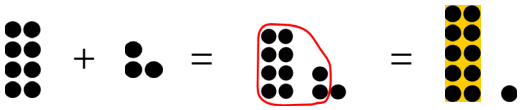
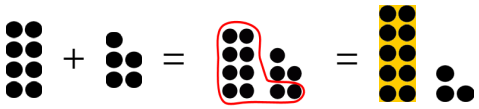
Adding with 8

Imagine that 8 wants to be a 10! It takes two from the other number (from 3). So, 8 becomes 10, and only 1 is left over.



8 + 3 = 10 + 1 = 11

8 wants to be a 10! So, it takes two from the other number (from 5). So, 8 becomes 10, and 3 are left over.

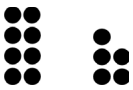
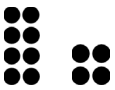
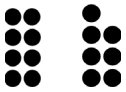
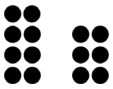
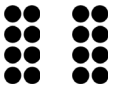
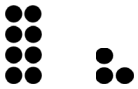


8 + 5 = 10 + 3 = 13

Use the list on the right to practice. Don't write the answers there. Just point to different problems and say the answer aloud.

8 + 1 = ☐
8 + 2 = ☐
8 + 3 = ☐
8 + 4 = ☐
8 + 5 = ☐
8 + 6 = ☐
8 + 7 = ☐
8 + 8 = ☐
8 + 9 = ☐

1. Add. First, circle the ten.

 **a.** 8 + 5 10 + 3 = ____	 **b.** 8 + 4 10 + ____ = ____	 **c.** 8 + ____ 10 + ____ = ____
 **d.** 8 + ____ = 10 + ____ = ____	 **e.** 8 + ____ = 10 + ____ = ____	 **f.** 8 + ____ = 10 + ____ = ____

2. It is good to memorize the doubles, also. Fill in.

2 + 2 = _____	5 + 5 = _____	8 + 8 = _____
3 + 3 = _____	6 + 6 = _____	9 + 9 = _____
4 + 4 = _____	7 + 7 = _____	10 + 10 = _____

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Addition facts with eight. Do not write the answers down, but just practice the sums.

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

3. Add and fill in what is missing.

a. 8 + 4 = _____ 8 + 6 = _____	**b.** 7 + 8 = _____ 8 + 5 = _____	**c.** 3 + 8 = _____ 8 + 9 = _____
d. 8 + ____ = 13 8 + ____ = 15	**e.** 8 + ____ = 12 8 + ____ = 16	**f.** ____ + 8 = 11 ____ + 8 = 14

4. **a.** Jenny ate 8 strawberries, and Jack ate 5 more than what Jenny did.
How many strawberries did Jack eat?

b. Ashley is 13 years old, and Maryann is 5.
How many years older is Ashley than Maryann?

5. Find the patterns and continue them.

a. 8 + 2 = _____ 8 + 4 = _____ 8 + 6 = _____ 8 + ___ = _____ ___ + ____ = _____ ___ + ____ = _____ ___ + ____ = _____	**b.** 18 + 2 = _____ 18 + 4 = _____ 18 + 6 = _____ 18 + ____ = _____ _____ + ____ = _____ _____ + ____ = _____ _____ + ____ = _____	**c.** $\frac{1}{2}$ of 0 is _____. $\frac{1}{2}$ of 2 is _____. $\frac{1}{2}$ of 4 is _____. $\frac{1}{2}$ of _____ is _____. $\frac{1}{2}$ of _____ is _____. $\frac{1}{2}$ of _____ is _____. $\frac{1}{2}$ of _____ is _____.

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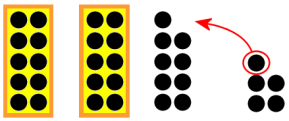
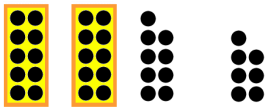
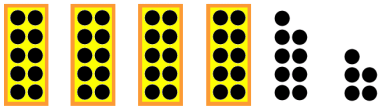
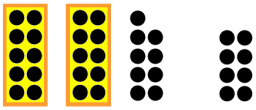
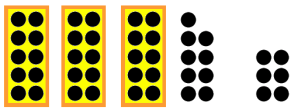
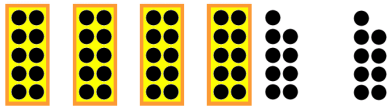
Add with Two-Digit Numbers Ending in 9

Imagine that 29 wants to be 30... so it "grabs" one from 5. Then, 29 becomes 30, and 5 becomes 4. The addition problem is changed to 30 + 4 = 34.	 29 + 5 = _____

1. Circle the nine dots and one more dot to form a complete ten. Add.

 a. 19 + 5 = _____	 **b.** 29 + 7 = _____	 **c.** 49 + 5 = _____
 **d.** 29 + 8 = _____	 **e.** 39 + 6 = _____	 **f.** 49 + 9 = _____

2. Add. For each problem, write a helping problem using the "ones" from the first problem.

a. 19 + 7 = _____ 9 + 7 = _____	**b.** 49 + 3 = _____ _____ + _____ = _____	**c.** 39 + 4 = _____ _____ + _____ = _____

3. Add. Compare the problems.

a. 9 + 3 = _____ 19 + 3 = _____	**b.** 9 + 6 = _____ 39 + 6 = _____	**c.** 9 + 4 = _____ 49 + 4 = _____
d. 9 + 7 = _____ 39 + 7 = _____ 29 + 7 = _____	**e.** 9 + 9 = _____ 69 + 9 = _____ 79 + 9 = _____	**f.** 9 + 5 = _____ 19 + 5 = _____ 59 + 5 = _____

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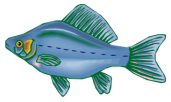
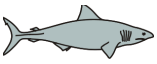
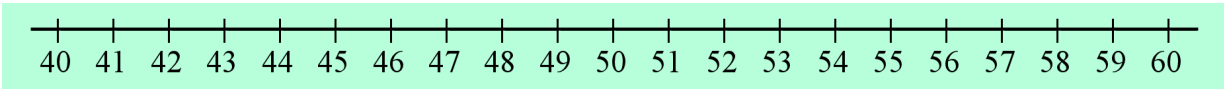
4. These problems review the basic facts with 9 and 8. By this time you should already remember these addition facts. Try to remember what number will fit without counting.

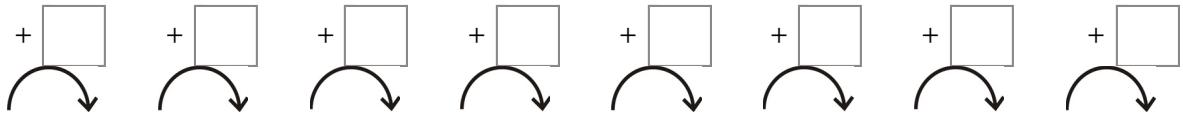
a. 	b.	c. 	d.
$14 - 9 =$ _____	$4 + 9 =$ _____	$15 -$ _____ $= 8$	$7 + 8 =$ _____
$15 - 9 =$ _____	$8 + 9 =$ _____	$17 -$ _____ $= 8$	$5 + 8 =$ _____
$13 - 9 =$ _____	$5 + 9 =$ _____	$12 -$ _____ $= 8$	$6 + 8 =$ _____
$18 - 9 =$ _____	$6 + 9 =$ _____	$14 -$ _____ $= 8$	$3 + 8 =$ _____
$17 - 9 =$ _____	$9 + 9 =$ _____	$13 -$ _____ $= 8$	$9 + 8 =$ _____
$16 - 9 =$ _____	$7 + 9 =$ _____	$16 -$ _____ $= 8$	$4 + 8 =$ _____

5. Find the difference of numbers. The number line can help.

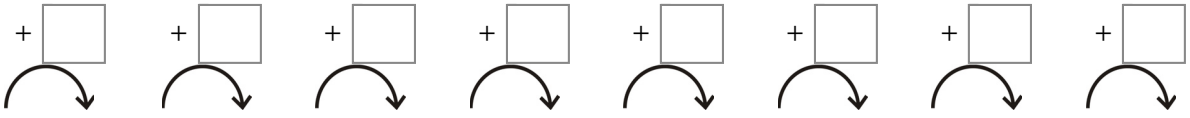


a. Difference between 41 and 53 _____	b. Difference between 60 and 46 _____	c. Difference between 59 and 48 _____

6. Find the patterns and continue them!

a. 

0 1 3 6 10 _____ _____ _____ _____

b. 

_____ _____ _____ _____ _____ 44 48 52 56

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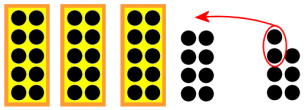
Add a Two-Digit Number and a Single-Digit Number Mentally

Imagine that 38 wants to be 40, so it "grabs" two from 7. Then, 38 becomes 40, and 7 becomes 5.

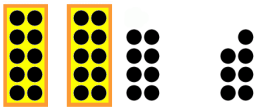
The addition problem is changed to 40 + 5 = 45.



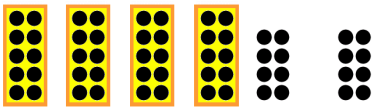
38 + 7 = _____

1. Circle the eight dots and two more dots to form a complete ten. Add.

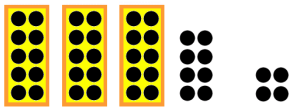
a. 18 + 6 = _____



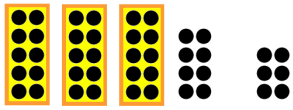
b. 28 + 7 = _____



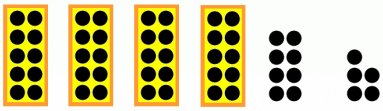
c. 48 + 8 = _____



d. 38 + 4 = _____



e. 38 + 6 = _____



f. 48 + 5 = _____

2. Add. Think of the trick explained above.

a. 18 + 7 = _____

b. 38 + 6 = _____

c. 58 + 5 = _____

3. Add. Compare the problems. What is similar about the problems in each box?

a. 8 + 3 = _____

18 + 3 = _____

b. 8 + 6 = _____

38 + 6 = _____

c. 8 + 4 = _____

78 + 4 = _____

d. 8 + 2 = _____

38 + 2 = _____

28 + 2 = _____

e. 8 + 9 = _____

68 + 9 = _____

78 + 9 = _____

f. 8 + 5 = _____

18 + 5 = _____

58 + 5 = _____

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