

math

MAMMOTH

Grade 1 - B Worktext

Addition and subtraction facts within 0 - 10

Clock and calendar

Shapes and measuring

Adding and subtracting within 0 - 100

Counting coins



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Foreword

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

1. The concepts of addition and subtraction, and strategies for addition and subtraction facts (chapters 1-2 and chapter 4);
2. Developing understanding of whole number relationships and place value till 100 (chapter 3 and chapter 7);
3. Developing understanding of measuring lengths as iterating length units (chapter 6); and
4. Reasoning about attributes of geometric shapes, such as the number of sides and the number of corners, and composing and decomposing geometric shapes (chapter 6).

Additional topics we study in the first grade are the clock to the half hour (chapter 5) and counting coins (chapter 8).

This book, 1-B, covers strategies for addition and subtraction facts, clock, shapes and measuring, adding and subtracting with two-digit numbers, and counting coins. The book 1-A covers addition concept, subtraction concept, and place value with two-digit numbers.

When you use these two books as your only or main mathematics curriculum, they are like a “framework,” but you still have a lot of liberty in planning your child's studies. While addition and subtraction topics are best studied in the order they are presented, feel free to go through the geometry, clock, and money sections in a different order.

This might even be advisable if your child is “stuck” on some concept, or is getting bored. Sometimes the brain “mulls it over” in the background, and the concept he/she was stuck on can become clear after a break.

Math Mammoth aims to concentrate on a few major topics at a time, and study them in depth. This is totally opposite to the continually spiraling step-by-step curricula, in which each lesson typically is about a different topic from the previous or next lesson, and includes a lot of review problems from past topics.

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

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

I wish you success in your math teaching!

Maria Miller, the author

Chapter 4: Addition and Subtraction Facts

Introduction

This chapter provides lots of practice for learning and memorizing the basic addition and subtraction facts within 0-10. The Common Core Standards call for children to demonstrate fluency for addition and subtraction within 10 in the first grade, and this is what this chapter is for.

Since this chapter is somewhat repetitive, consider studying this chapter simultaneously with some other chapter, such as clock or shapes and measuring. For example, you could study a little shapes and measuring and a little from this chapter each day, or study the two different chapters on alternate days. This is not compulsory; it is just a suggestion to “mix things up” in a somewhat spiral fashion.

The lessons titled Addition and Subtraction Facts With... aim at memorization of the basic facts within 0-10. We approach it from the concept of “fact families,” which makes the process to be logical and structured. These lessons have a lot of repetition and practice for both subtraction and addition facts.

Some children may not need all of the practice. Use your judgment and skip some pages in this section if you feel it is necessary. You can also “save” some of the pages to be completed later, as a review.

Alongside this book, you can also use math games or flashcards to reinforce these facts. You will find a list of some free online games below.

While your child does not absolutely have to learn these facts by heart while studying this chapter, it is advisable to learn them fairly well here. Mathematics builds upon previously learned concepts and facts, and learning addition and subtraction facts is essential for later study, such as when students add $24 + 2$ (in chapter 7 of this curriculum). However, if the child does not memorize these facts yet, don't worry. Go on with the curriculum, but keep practicing the facts with games, worksheets, drill, etc., on the side during the rest of first grade.

Besides practicing the facts with the help of fact families, children also solve word problems, fill in number patterns, get used to a symbol, such as , for the unknown number, compare expressions (such as $5 - 2 < 2 + 5$), and subtract many numbers.

The Lessons in Chapter 4

	page	span
Addition and Subtraction Facts with 4 and 5	10	2 pages
Addition and Subtraction Facts with 6	12	3 pages
Addition and Subtraction Facts with 7	15	2 pages
Addition and Subtraction Facts with 8	17	4 pages
Addition and Subtraction Facts with 9	21	3 pages
Addition and Subtraction Facts with 10	24	4 pages
Subtracting Many Numbers	28	2 pages
Review - Facts with 6, 7, and 8	30	2 pages
Review - Facts with 9 and 10	32	3 pages

Games for Addition and Subtraction Facts

10 Out (or 5 Out or 6 Out etc.)

You need: lots of number cards with numbers 1-10, such as regular playing cards without the picture cards, Uno cards without the special cards, etc.

Rules: Deal seven cards to each player. Place the rest in a stack in the middle, face down.

At his turn, each player *may* first take one card from the deck. Then, each player *may* ask for one card from the player on their right (like in 'Go Fish'), and the person has to give the player the card if the person has it. Then the player may discard any two cards in his hand that add up to 10, or the "10" card itself.

The player who first discards all cards from his hand, wins.

Adaptations:

- * Deal more cards instead of seven.
- * Deal fewer cards if there are very many players or the players are 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 picture cards for 11, 12, and 13.

Some Went Hiding

You need: As many small objects as is the sum you are studying. For example, to study the sums with 12, you need 12 marbles, or 12 blocks, etc.

Rules: The first player shows the objects, and quickly hides SOME behind his/her back without showing how many. Then he/she shows the remaining objects to the next player, who has to tell 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 gives the wrong answer, he misses his turn. This game appeals best to young children.

Adaptations:

- * Instead of getting a turn, the player may gain points or other rewards for the right answer.

Addition (or Subtraction) Battle

You need: A standard deck of playing cards from which you remove the picture cards, and perhaps also some of the other higher number cards such as tens, nines, and eights. Alternatively, a set of dominoes works well for children who don't yet know their numbers beyond 12.

Rules: In each round, each player is dealt two cards face up, and has to calculate the sum (subtract/add). The player with the highest sum gets all the cards from the other players. After enough rounds so that all of the cards are used, the player with the most cards wins.

If there is a tie, such as two players have the sum of 11, those players get an additional two cards and "battle" with those to resolve the tie.

Adaptations:

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

Helpful Resources on the Internet

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

Fun 4 The Brain

Practice your basic facts with these kid-appealing simple games.

<http://www.fun4thebrain.com/addition.html>

<http://www.fun4thebrain.com/subtraction.html>

Mental Math Practice

Online practice of sets of 10 addition and subtraction questions; timed

<http://www.teachingtreasures.com.au/maths/mental-maths/yr1-maths-pg1.htm>

Math Facts Practice at playKidsgames.com

Timed practice with various skill levels.

<http://www.playkidsgames.com/games/mathfact/default.htm>

Number Bond Machines

Practice which two numbers add up to a given number.

<http://www.amblesideprimary.com/ambleweb/mentalmaths/numberbond.html>

Online Subtraction Flash Cards

<http://www.thegreatmartinicompany.com/WebMozilla/subtractionm.html> and

<http://www.thegreatmartinicompany.com/WebMozilla/subtractionmfill.html>

Addition Eaters and Subtraction Eaters

Eat the addition (or subtraction) problems if the sum (difference) is a given number.

<http://www.hoodamath.com/games/addition.php>

<http://www.hoodamath.com/games/subtraction.php>

Sum Stacker

Drag dice from stack to stack until the sums of each stack equal the sums given.

<http://www.carstensstudios.com/mathdoodles/sumsstacker.html>

An addition/subtraction card game

This card game is an easy, cheap and fun alternative to drill.

<http://diosadotada.homeschooljournal.net/2008/05/15/easy-cheap-alternative-to-drill-kill>

Fun math card game

A simple and fun card game for addition/subtraction.

<http://blog.aussiepumpkinpatch.com/2010/03/meal-ticket-math.html>

Face off! and other card and board games

Students place markers on the numbers 2-12, toss two dice, find the sum and remove a marker from that number. The page has other addition games also.

<http://www.mathwire.com/games/addsubgames.html>

Number Line Bounce

Arrange the given bounce arrows on a number line using addition and subtraction until you reach the target number. Since it uses several operations, it is *challenging* for first graders, but give it a try.

http://nlvm.usu.edu/en/nav/frames_asid_107_g_1_t_1.html

Sample worksheet from

www.mathmammoth.com

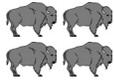
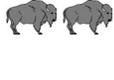
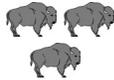
Tux Math

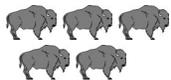
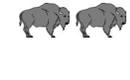
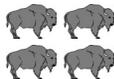
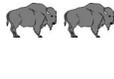
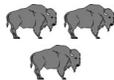
A versatile arcade game for math facts with many options. Includes all operations. You need to shoot falling comets that can damage penguins' igloos. **Price:** Free.

<http://sourceforge.net/projects/tuxmath>

See also my review: <http://homeschoolmath.blogspot.com/2011/05/tux-math.html>

Addition and Subtraction Facts with 4 and 5

Facts with 4		$4 + 0 = 4$	$4 - 4 = 0$
		$0 + 4 = 4$	$4 - 0 = 4$
	 	$1 + 3 = 4$	$4 - 3 = 1$
	 	$3 + 1 = 4$	$4 - 1 = 3$
	 	$2 + 2 = 4$	$4 - 2 = 2$

Facts with 5		$5 + 0 = 5$	$5 - 5 = 0$
		$\underline{\quad} + \underline{\quad} = 5$	$5 - \underline{\quad} = \underline{\quad}$
	 	$4 + 1 = 5$	$5 - 4 = \underline{\quad}$
		$1 + 4 = 5$	$5 - \underline{\quad} = \underline{\quad}$
	 	$3 + 2 = 5$	$5 - 3 = \underline{\quad}$
	 	$\underline{\quad} + \underline{\quad} = 5$	$5 - \underline{\quad} = \underline{\quad}$

1. Find the missing numbers.

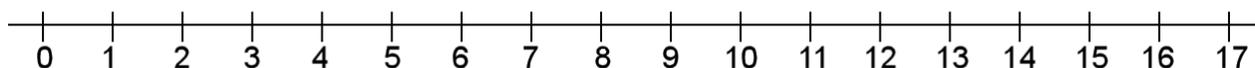
a.	b.	c.	d.
$3 + \underline{\quad} = 4$	$2 + \underline{\quad} = 5$	$5 - 0 = \underline{\quad}$	$4 - 0 = \underline{\quad}$
$1 + \underline{\quad} = 4$	$1 + \underline{\quad} = 5$	$5 - 4 = \underline{\quad}$	$4 - 3 = \underline{\quad}$
$1 + \underline{\quad} = 5$	$4 + \underline{\quad} = 5$	$5 - 2 = \underline{\quad}$	$5 - 1 = \underline{\quad}$
$2 + \underline{\quad} = 4$	$3 + \underline{\quad} = 5$	$4 - 1 = \underline{\quad}$	$4 - 2 = \underline{\quad}$

2. Color the square

- yellow if the answer is 0.
- red if the answer is 1,
- blue if the answer is 2,
- green if the answer is 3,
- purple if the answer is 4,
- orange if the answer is 5.

$5 - 4$	$2 + 3$	$4 - 4$	$1 + 2$	$4 - 2$	$1 + 3$
$2 + 2$	$3 - 2$	$5 - 0$	$0 + 0$	$5 - 2$	$1 + 1$
$0 + 2$	$5 - 1$	$0 + 1$	$1 + 4$	$0 - 0$	$4 - 1$

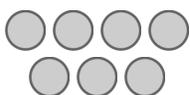
3. Continue the patterns as long as you can!



$17 - 0 = \underline{\quad}$	$10 + \underline{\quad} = 10$	$5 - 2 = \underline{\quad}$
$17 - 1 = \underline{\quad}$	$10 + \underline{\quad} = 11$	$6 - 2 = \underline{\quad}$
$17 - 2 = \underline{\quad}$	$10 + \underline{\quad} = 12$	$7 - 2 = \underline{\quad}$
$17 - \underline{\quad} = \underline{\quad}$	$10 + \underline{\quad} = \underline{\quad}$	$\underline{\quad} - 2 = \underline{\quad}$
$17 - \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\underline{\quad} - \underline{\quad} = \underline{\quad}$
$\underline{\quad} - \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\underline{\quad} - \underline{\quad} = \underline{\quad}$
$\underline{\quad} - \underline{\quad} = \underline{\quad}$	$\underline{\quad} + \underline{\quad} = \underline{\quad}$	$\underline{\quad} - \underline{\quad} = \underline{\quad}$

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Subtracting Many Numbers



$$7 - 1 - 2 = ??$$

You have 7 balls. First you take away 1 ball, and then you take away 2 more balls. You will have 4 balls left. $7 - 1 - 2 = 4$.

1. Subtract two times, taking away circles. You can cover the circles to help.

a.

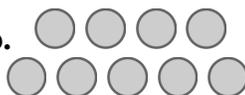


$$8 - 2 - 3 = \underline{\quad}$$

$$8 - 5 - 2 = \underline{\quad}$$

$$8 - 1 - 3 = \underline{\quad}$$

b.



$$9 - 3 - 1 = \underline{\quad}$$

$$9 - 4 - 2 = \underline{\quad}$$

$$9 - 2 - 5 = \underline{\quad}$$

c.



$$10 - 5 - 3 = \underline{\quad}$$

$$10 - 6 - 2 = \underline{\quad}$$

$$10 - 1 - 4 = \underline{\quad}$$

2. Solve. You can draw pictures to help.

a. Mary had ten cookies. She gave two to her brother, and two to her sister.
How many does she have left?

b. Seven birds were in the tree. Three flew away.
After a while, one more flew away.
How many birds are left in the tree?

c. Three cars were in the parking lot. Then, three more cars drove in. After that, two more cars drove in. How many cars are there now?

d. Jack had \$5. His mom gave him \$1,
and his dad gave him \$2.
How many dollars does Jack have now?

You can subtract two numbers this way:

$$\begin{array}{r} 8 - 2 - 3 \\ \quad \backslash \quad / \\ \quad 6 - 3 = 3 \end{array}$$

First take away 2. That leaves 6.
Then, from 6, subtract 3. That leaves 3.

OR you can subtract them this way:

$$\begin{array}{r} 8 - 2 - 3 \\ \quad \backslash \quad / \\ 8 - 5 = 3 \end{array}$$

Check how much you need to subtract or take away *in total*. You need to subtract 2 and 3, or a total of 5. So, subtract $8 - 5 = 3$.

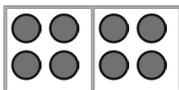
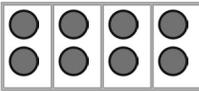
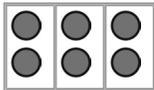
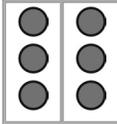
3. Subtract using either way.

a. $7 - 2 - 3 = \underline{\quad}$ $9 - 2 - 6 = \underline{\quad}$	b. $9 - 7 - 1 = \underline{\quad}$ $6 - 2 - 2 = \underline{\quad}$	c. $7 - 5 - 1 = \underline{\quad}$ $10 - 6 - 1 = \underline{\quad}$
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4. Solve. Compare the two problems and their results.

a. $10 - 3 - 2 = \underline{\quad}$ $10 - 3 - 3 = \underline{\quad}$	b. $7 - 3 - 3 = \underline{\quad}$ $7 - 4 - 3 = \underline{\quad}$	c. $9 - 6 - 1 = \underline{\quad}$ $8 - 6 - 1 = \underline{\quad}$
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5. Match the subtraction problems to the right pictures.

	a. $8 - 2 - 2 - 2 - 2 = 0$	
	b. $8 - 4 - 4 = 0$	
	c. $6 - 2 - 2 - 2 = 0$	
	d. $6 - 3 - 3 = 0$	

Puzzle Corner

Here are some problems with four numbers!

$9 - 3 - 2 - 1 = \underline{\quad}$

$10 - 1 - 2 - 1 = \underline{\quad}$

$8 - 4 - 1 - 2 = \underline{\quad}$

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Chapter 5: Clock

Introduction

The fifth chapter covers reading the clock (whole hours and half hours) and some basics of time and calendar.

Reading the clock - whole and half hours

The main goal of this chapter is to learn the whole and half hours on the clock.

In the first lesson we use an analog clock without the minute hand. The child learns whole and half hours with this special clock, and also practices what time it is one hour or a half-hour later than a given time.

The next lesson talks about the minutes. While it does have some clock reading to the nearest five minutes, the main focus in this lesson is to learn that one hour is 60 minutes, a half-hour is 30 minutes, and how the phrases “o'clock” and “half past” relate to the hours and minutes.

For example, the child is to learn that half past eight is written 8:30, and that the “30” part means minutes, and that half an hour IS 30 minutes.

The book has a few exercises about reading the clock to the five-minute intervals; however this can be skipped. The second grade book has much more practice on reading the clock to the nearest five minutes.

I have included one lesson about time order. The topics in this lesson are hopefully already familiar to the student. The next lesson deals with morning and afternoon hours: AM and PM. The goal is to understand that at midnight, the clock starts at 12 hours, and goes through all the hours from 1 to 12, and then it is noon, and after that the hours again go from 1 to 12 until it is midnight again.

We will also briefly look at the calendar, and practice the names of the months.

Reading the clock is a skill that can and should be practiced in everyday situations from now on so that children can learn by experience and not just by filling in math book pages.

The Lessons

	page	span
Whole and Half Hours	37	4 pages
The Minutes and Half Hours.....	41	4 pages
Time Order	45	2 pages
AM and PM	47	3 pages
The 2012 Calendar	50	2 pages
Review - Half Hours	52	1 page

Helpful Resources on the Internet

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

Flashcard Clock

Read the analog and type in the time in digital. Very clear clock and good fast response!

http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard_clock.htm

Teaching Time

Analogue/digital clock games and worksheets. Also an interactive “class clock” to demonstrate time.

<http://www.teachingtime.co.uk/>

A Matter of Time

Lesson plans for telling time, interactive activities, and some materials to print.

<http://www.fi.edu/time/Journey/JustInTime/contents.html>

Clockwise

Plug in a time, and the clock runs till it reaches it, or the clock runs to a time and you type it in.

<http://www.shodor.org/interactivate/activities/clock2/index.html>

Clock

(The words, “Evaluation version” are across the screen)

Use the buttons to advance the clock in 5, 10, 15, 30 minute increments or drag the hands. Shows digital time also. For illustrations only; it does not have any quiz or questions.

<http://www.interactive-resources.co.uk/mathspack1/clock/clock.html>

The Right Time

A couple of interactive exercises about reading the clock.

<http://www.pitara.com/activities/math/time/time.asp?QNum=3>

What Time Is It?

Look at the analog clock and pick the digital clock that shows the same time.

<http://www.primarygames.com/time/start.htm>

Time-for-Time

Resource site to learn about time: worksheets, games, quizzes, time zones.

<http://www.time-for-time.com/default.htm>

That Quiz: Time

Online quizzes for all time-related topics: reading the clock, time passed, adding/subtracting with time, conversion of time units, and time zones practice. The quizzes have many levels, can be timed or not, and include lots of options for customization. Easy to use and set up.

www.thatquiz.org/tq-g/math/time

On Time

Set the clock's hands to the given time. Four different levels.

http://www.sheppardsoftware.com/mathgames/earlymath/on_time_game1.htm

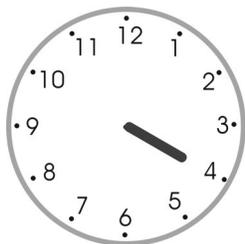
Clock Shoot

A game where you need to click on the clock with the matching time (analog/digital). Three different levels: whole hours, half hours, or quarter hours.

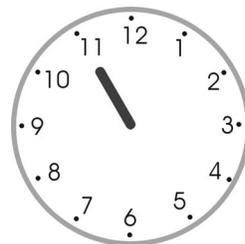
http://www.sheppardsoftware.com/mathgames/earlymath/clock_shoot.htm

Whole and Half Hours

In this lesson, the clock only has one hand - the HOUR hand.



The hour hand points to four - it is four o'clock, or "four hours".

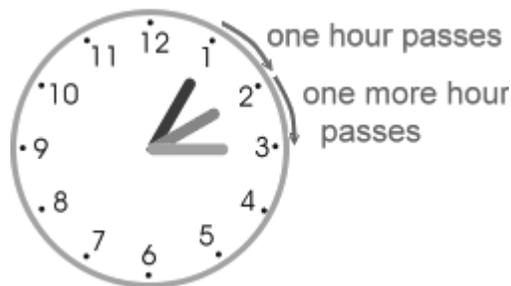


The hour hand points to eleven - it is eleven o'clock, or "eleven hours".

The hour hand slowly moves around the clock face: from 1 to 2 to 3, and so on.

When the hour hand moves from 1 to 2, exactly one hour of time has passed.

The same is true when the hour hand moves from 2 to 3. It takes the hour-hand one hour to do that.



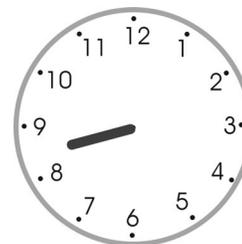
On this clock, the hour hand has first pointed to 5 - it was five o'clock.

Then it has moved **halfway** between 5 and 6. We say it is **half past five**.

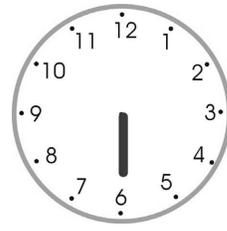
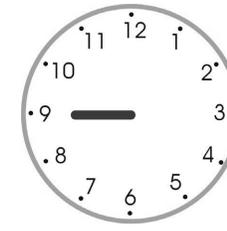
It takes the hour hand one-half hour to move from five to halfway between five and six.

The hour hand has moved past eight o'clock, and is halfway between 8 and 9. We say it is half past eight.

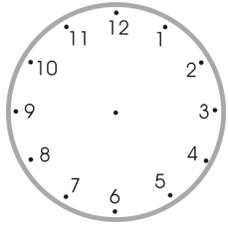
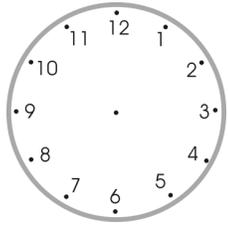
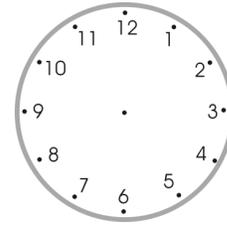
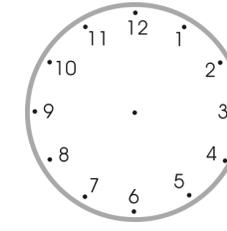
In half an hour, it will be nine o'clock.



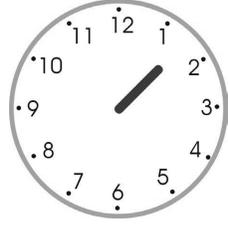
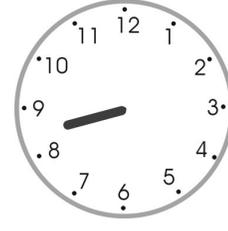
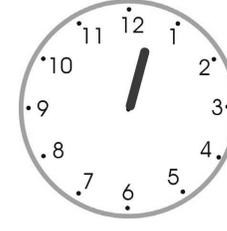
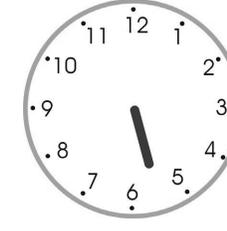
1. Write the time under each clock face.

 <p>a. _____ o'clock</p>	 <p>b. _____ o'clock</p>	 <p>c. _____ o'clock</p>	 <p>d. _____ o'clock</p>
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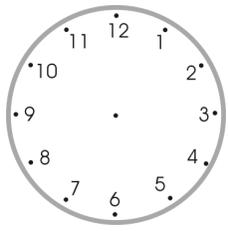
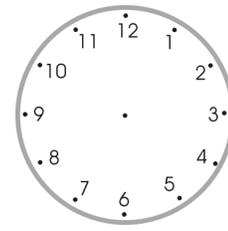
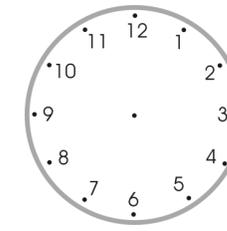
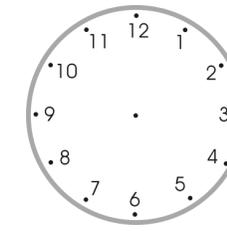
2. Draw the hour hand.

 <p>a. five o'clock</p>	 <p>b. eight o'clock</p>	 <p>c. twelve o'clock</p>	 <p>d. seven o'clock</p>
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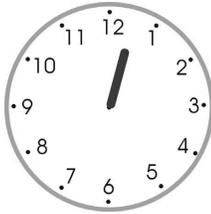
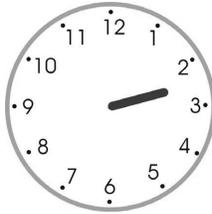
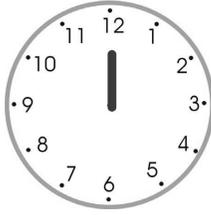
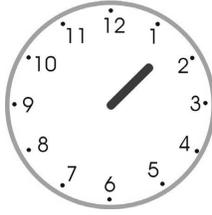
3. Write the time.

 <p>a. half past _____</p>	 <p>b. half past _____</p>	 <p>c. half past _____</p>	 <p>d. half past _____</p>
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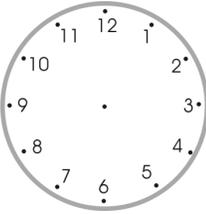
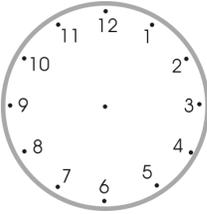
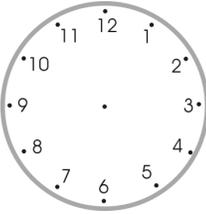
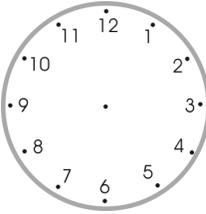
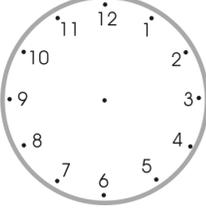
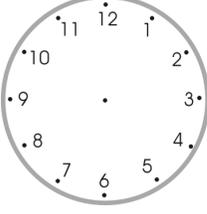
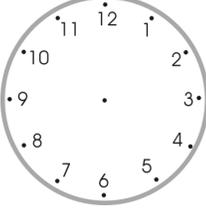
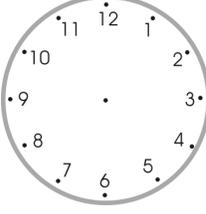
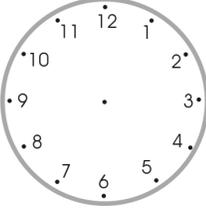
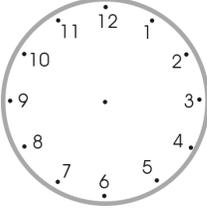
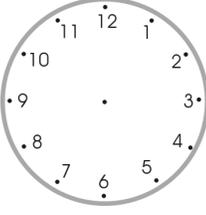
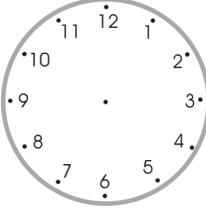
4. Draw the hour hand.

 <p>a. half past six</p>	 <p>b. half past three</p>	 <p>c. half past two</p>	 <p>d. half past four</p>
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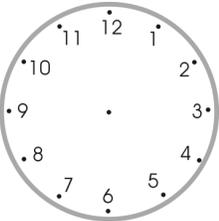
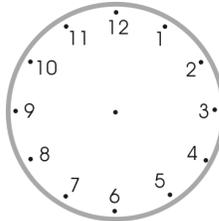
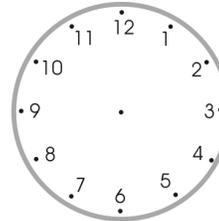
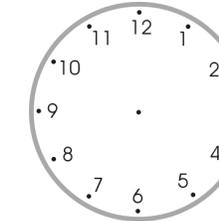
5. Write the time yourself!

 <p>a. _____ _____</p>	 <p>b. _____ _____</p>	 <p>c. _____ _____</p>	 <p>d. _____ _____</p>
 <p>e. _____ _____</p>	 <p>f. _____ _____</p>	 <p>g. _____ _____</p>	 <p>h. _____ _____</p>

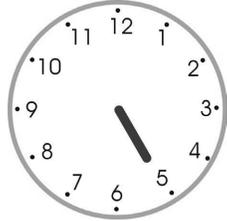
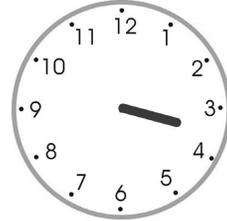
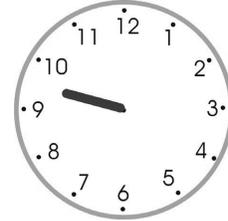
6. Draw the hour hands on the clocks. On the second row, show the time a half-hour later. On the third row, show the time another half-hour later (compared to the second row).

<p>Draw the hour hand.</p>	 <p>a. Five o'clock</p>	 <p>b. One o'clock</p>	 <p>c. Half-past six</p>	 <p>d. Half-past three</p>
<p>A half-hour later →</p>				
<p>Another half-hour later →</p>				

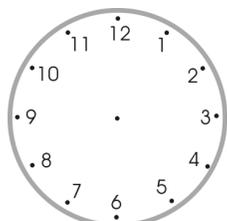
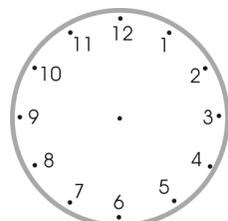
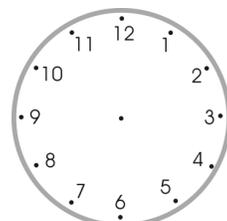
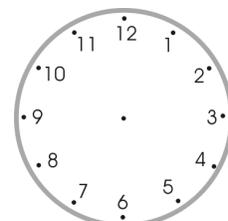
7. Draw the hour hand on the clocks. Then write the time that the clock shows a half-hour later.

				
	a. three o'clock	b. eleven o'clock	c. half-past five	d. half-past eleven
1/2 hour later →	half past _____	half past _____	_____ o'clock	_____ o'clock

8. Write the time that the clock shows. Then write the time an hour later.

				
	a. _____ o'clock	b. _____ o'clock	c. half past _____	d. half past _____
An hour later →	_____ _____	_____ _____	_____ _____	_____ _____

9. Draw the hour hand on the clock face. Write what time it would be an hour later.

				
	a. three o'clock	b. eleven o'clock	c. half-past five	d. half-past eleven
An hour later →	_____ _____	_____ _____	_____ _____	_____ _____

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Chapter 6: Shapes and Measuring

Introduction

The sixth chapter of *Math Mammoth Grade 1* covers basic shapes and the basic idea of measuring. We will also study three-dimensional shapes, halves and fourths, and inches and centimeters.

The goals of this section are:

- The student can identify common shapes, such as triangles, squares, rectangles, circles, and quadrilaterals.
- The student can draw lines with a ruler.
- The student develops understanding of measuring lengths as iterating (repeating) a measuring unit.

The lessons in this chapter can be quite easy, but they are laying a foundation for later studies. For example, dividing shapes into parts helps build an understanding of part-whole relationships *and* fractions, as well as the properties of the original shape and of the parts. They may seem easy to us (and even to your child), but are needful to lay a proper foundation for geometric understanding.

For additional practice, you can let the child draw lines and other shapes however he/she is able to, divide them to other shapes, and let him/her draw patterns on grid paper. A tangram or block shapes are also excellent aids.

The Lessons

	page	span
Basic Shapes	56	3 pages
Playing with Shapes	59	1 page
Printable Shapes	61	1 page
Drawing Basic Shapes	63	3 pages
Practicing Basic Shapes and Patterns	66	3 pages
Halves and Quarters	69	4 pages
Measuring Length	73	4 pages
Exploring Measuring	77	2 pages
Measuring Lines in Inches	79	3 pages
Measuring Lines in Centimeters	82	2 pages
Three-Dimensional Shapes	84	2 pages
Review	86	1 page

Helpful Resources on the Internet

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

Buzzing with Shapes

Tic tac toe with shapes; drag the counter to the shape that has that amount of sides.

<http://www.harcourtschool.com/activity/buzz/buzz.html>

Patch Tool

An online activity where the student designs a pattern using geometric shapes.

<http://illuminations.nctm.org/ActivityDetail.aspx?ID=27>

Shifting Shapes

Figure out what shape it is when viewing through a small opening! Click on the “eye” button to see it in its entirety.

<http://www.ictgames.com/YRshape.html>

Interactive Tangram Puzzle

Place the tangram pieces so they form the given shape.

http://nlvm.usu.edu/en/nav/frames_asid_112_g_2_t_1.html

Pattern Blocks

This program is designed to help with fractions, but children will enjoy just playing with the polygon shapes.

http://www.arcytech.org/java/patterns/patterns_j.shtml

Polygon Playground

Drag various colorful polygons to the work area to make your own creations!

<http://mathcats.com/explore/polygons.html>

Make Your Own Mandala

A mandala is a circular symmetrical design based on eights. Make your own and experiment with symmetry.

http://www.girlsgotech.org/world_around_us.html

Measure It!

Click on the ruler to measure a red bar.

<http://www.funbrain.com/measure/index.html>

Measure Lines

Move the ruler to measure the line in centimeters

http://www.freewebtown.com/weddell/mw/ruler/ruler_cm.swf

Elementary Teddy Bear Measurement Game

Measure the teddy bear with the ruler.

<http://www.apples4theteacher.com/measure.html>

Inchy Picnic Game

Measure with a ruler to find how many inches Andy Ant needs to go.

www.fuelthebrain.com/Game/play.php?ID=4

Shapes Identification Quiz from ThatQuiz.org

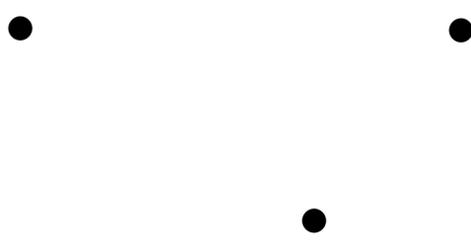
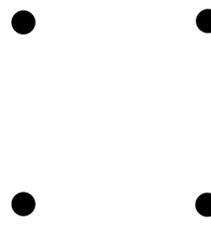
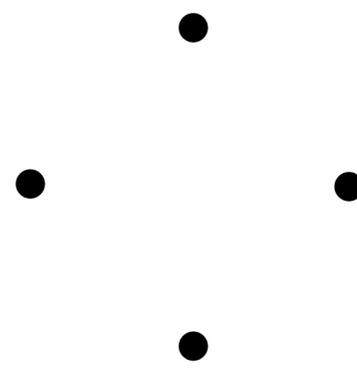
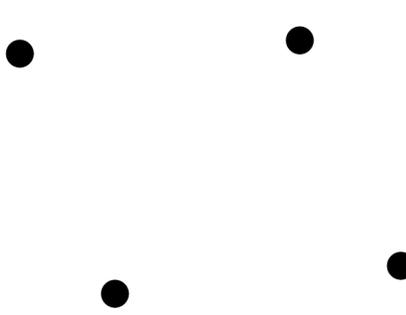
An online quiz in a multiple-choice format, asking to identify common two-dimensional shapes. You can modify the quiz parameters to your liking.

www.thatquiz.org/tq-f/math/shapes/

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Drawing Basic Shapes

1. Use a ruler to join the dots carefully with straight lines. What shape do you get?

<p>a.</p>  <p>I got a triangle / square / rectangle / other four-sided shape</p>	<p>b.</p>  <p>I got a triangle / square / rectangle / other four-sided shape.</p>
<p>c.</p>  <p>It is a triangle / square / rectangle / other four-sided shape.</p>	<p>d.</p>  <p>It is a triangle / square / rectangle / other four-sided shape.</p>
<p>e.</p>  <p>It is a triangle / square / rectangle / other four-sided shape.</p>	<p>f.</p>  <p>It is a triangle / square / rectangle / other four-sided shape.</p>

2. **a.** Draw four dots anywhere in this space.

Join the dots with lines. Use a ruler!

What shape did you get? A square,
a rectangle, or just a four-sided shape?

b. This time try to draw four dots in this
space so that you would get a rectangle.

c. Draw a rectangle. This time, use a **BOOK** to draw straight corners.

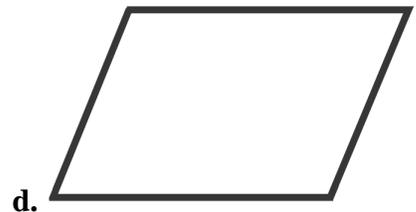
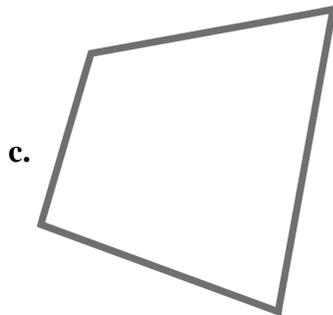
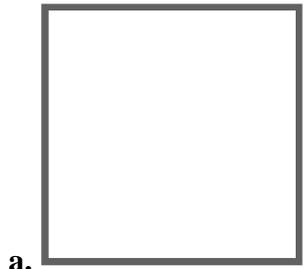
3. The shapes (a), (b), (c), and (d) below are four-sided shapes (quadrilaterals).
 In each shape, draw a line from one corner to the opposite corner.

What kind of shapes do you get now? _____

Now draw another line from corner to corner in each shape, using the two other corners you didn't yet use.

How many parts does each four-sided shape have now? _____

What kind of shapes are these parts? _____

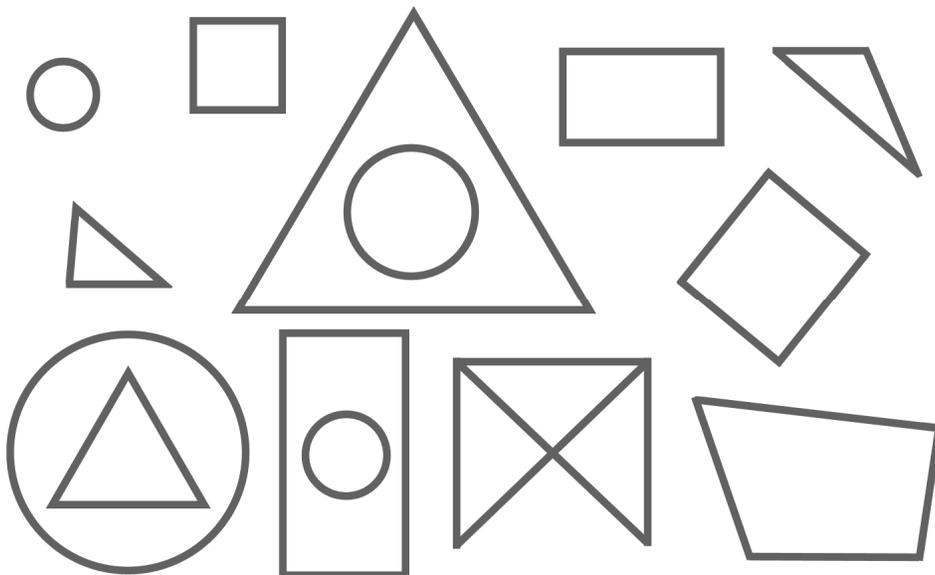


4. Choose a color for each shape, and color!

Triangles are _____. Circles are _____.

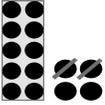
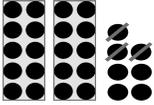
Squares are _____. Rectangles are _____.

Other four-sided shapes are _____.



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Subtracting Within the Same Ten

 <p>$14 - 2 = \underline{12}$</p> <p>“I can subtract $4 - 2 = 2$; the 10 stays the same.”</p>	 <p>$27 - 3 = \underline{24}$</p> <p>“I can subtract $7 - 3 = 4$; the 20 stays the same.”</p>	<p>Think of the <i>ones digits</i> only. The tens do not change, because we don't have to subtract from the tens.</p>
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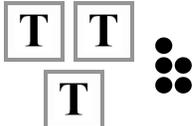
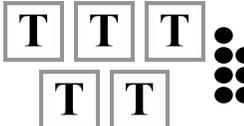
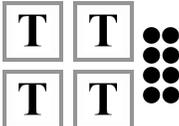
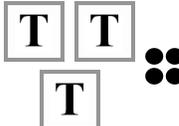
1. Subtract and compare. The top problem helps you solve the bottom one!

<p>a. $8 - 2 = \underline{6}$</p> <p>$28 - 2 = \underline{26}$</p>	<p>b. $7 - 6 = \underline{\quad}$</p> <p>$17 - 6 = \underline{\quad}$</p>	<p>c. $7 - 7 = \underline{\quad}$</p> <p>$67 - 7 = \underline{\quad}$</p>
<p>d. $6 - 6 = \underline{\quad}$</p> <p>$56 - 6 = \underline{\quad}$</p>	<p>e. $9 - 8 = \underline{\quad}$</p> <p>$49 - 8 = \underline{\quad}$</p>	<p>f. $5 - 2 = \underline{\quad}$</p> <p>$95 - 2 = \underline{\quad}$</p>

2. Subtract. Think of the “helping problem” that only uses numbers less than 10.

<p>a. $54 - 2 = \underline{\quad}$</p> <p>$4 - 2 = \underline{\quad}$</p>	<p>b. $76 - 2 = \underline{\quad}$</p> <p>$\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>	<p>c. $88 - 4 = \underline{\quad}$</p> <p>$\underline{\quad} - \underline{\quad} = \underline{\quad}$</p>
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3. Subtract. Cross out dots. The box with “T” is a ten.

<p>a. </p> <p>$35 - 4 = \underline{\quad}$</p> <p>$35 - 3 = \underline{\quad}$</p> <p>$35 - 2 = \underline{\quad}$</p>	<p>b. </p> <p>$57 - 7 = \underline{\quad}$</p> <p>$57 - 5 = \underline{\quad}$</p> <p>$57 - 3 = \underline{\quad}$</p>	<p>c. </p> <p>$48 - 2 = \underline{\quad}$</p> <p>$48 - 4 = \underline{\quad}$</p> <p>$48 - 6 = \underline{\quad}$</p>	<p>d. </p> <p>$34 - 1 = \underline{\quad}$</p> <p>$34 - 2 = \underline{\quad}$</p> <p>$34 - 4 = \underline{\quad}$</p>
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4. Subtract.

a.	b.	c.	d.
$77 - 6 = \underline{\quad}$	$47 - 2 = \underline{\quad}$	$57 - 4 = \underline{\quad}$	$15 - 3 = \underline{\quad}$
$22 - 1 = \underline{\quad}$	$75 - 1 = \underline{\quad}$	$86 - 2 = \underline{\quad}$	$98 - 4 = \underline{\quad}$

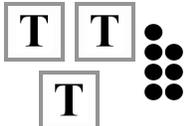
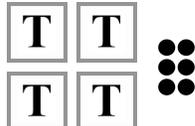
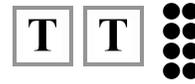
5. Find the missing addends.

a. $10 + \underline{\quad} = 15$	b. $21 + \underline{\quad} = 22$	c. $65 + \underline{\quad} = 69$
$32 + \underline{\quad} = 38$	$94 + \underline{\quad} = 95$	$33 + \underline{\quad} = 36$
$72 + \underline{\quad} = 79$	$44 + \underline{\quad} = 48$	$91 + \underline{\quad} = 98$

6. Solve.

a. Katherine sold 21 painted pictures in the morning, and 7 in the afternoon. How many pictures did she sell all totaled?
b. She had 30 pictures to sell when she started. How many does she have left now?
c. Katherine can paint a picture in one hour. She started painting at 4:30 and painted three pictures. What time did she stop painting?

7. Take away the ones (the dots) so that only the whole tens are left.

a. 	b. 	c. 
$37 - \underline{\quad} = 30$	$46 - \underline{\quad} = 40$	$28 - \underline{\quad} = \underline{\quad}$
d. $57 - \underline{\quad} = \underline{\quad}$	e. $85 - \underline{\quad} = \underline{\quad}$	f. $69 - \underline{\quad} = \underline{\quad}$

8. Solve. In the last row, make your own problems, and let a friend solve them!

a. $50 + \bigcirc = 57$	b. $\bigcirc + 2 = 88$	c. $79 - 9 = \bigcirc$
d. $\bigcirc - 5 = 20$	e. $90 - \bigcirc = 85$	f. $42 = 40 + \bigcirc$
$\bigcirc + \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$		$\underline{\hspace{2cm}} + \bigcirc = \underline{\hspace{2cm}}$

9. Count by fives. Notice the patterns! A 100-chart or an abacus can help you.

- a. 10, 15, _____, _____, _____, _____, _____, _____, _____
- b. 1, 6, _____, _____, _____, _____, _____, _____, _____
- c. 3, 8, _____, _____, _____, _____, _____, _____, _____

10. Continue the patterns.

a.	b.	c.
$88 - 0 = \underline{\hspace{2cm}}$	$95 - 2 = \underline{\hspace{2cm}}$	$48 - 1 = \underline{\hspace{2cm}}$
$88 - 1 = \underline{\hspace{2cm}}$	$85 - 2 = \underline{\hspace{2cm}}$	$46 - 1 = \underline{\hspace{2cm}}$
$88 - 2 = \underline{\hspace{2cm}}$	$75 - 2 = \underline{\hspace{2cm}}$	$44 - 1 = \underline{\hspace{2cm}}$
$88 - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - 1 = \underline{\hspace{2cm}}$
$88 - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$
$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$	$\underline{\hspace{2cm}} - \underline{\hspace{2cm}} = \underline{\hspace{2cm}}$

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Chapter 8: Coins

Introduction

In this chapter, we study counting coins. The goals are:

- The student is able to identify pennies, nickels, dimes and quarters.
- The student is able to count the money in coins when the cent sum is at most 100 cents.

While the book has pictures for the coins, practicing with real coins is of course advisable.

The student also practices making given money amounts with coins, and using coins in shopping.

If your book is printed in black and white, you can color the pennies dark orange before doing the exercises.

The Lessons

	page	span
Counting Dimes, Nickels, and Cents	135	<i>3 pages</i>
Counting Dimes, Nickels, and Cents 2	138	<i>2 pages</i>
Quarters	140	<i>3 pages</i>
Practicing with Money	143	<i>2 pages</i>
Review - Coins	145	<i>1 page</i>

Helpful Resources on the Internet

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

Counting coins worksheets

Create free worksheets for counting all U.S. coins and some bills. You can choose the number of coins, the maximum total amount, and the number of problems.

<http://www.homeschoolmath.net/worksheets/money.php>

Counting Money Activity from Harcourt

Count the coin value and type it into the box and click 'Check'.

http://www.hbschool.com/activity/counting_money/

Piggy bank

When coins fall from the top of the screen, choose those that add up to the given amount, and the piggy bank fills.

<http://fen.com/studentactivities/Piggybank/piggybank.html>

The One Dollar Store

Choose enough of the quarters, dimes, nickels, and pennies to make up the exact price of a toy.

<http://www.smartygames.com/igre/game.php?dir=math&file=learnMoney>

Change maker

Determine how many of each denomination you need to make the exact change. Good and clear pictures!

Playable in US, Canadian, Mexican, UK, or Australian money.

<http://www.funbrain.com/cashreg/index.html>

Coins and Medals from U.S. Mint

History and pictures of the circulating coins, commemorative coins, Native American \$1 Coin Program, and the Presidential \$1 Coin Program. Learn also how coins are made and take a virtual tour around the mint.

www.usmint.gov/kids/coinsMedals

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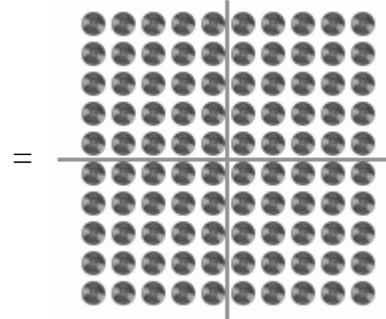
Quarters



One **quarter** is 25 cents.

The word “quarter” means one-fourth. A quarter coin is one-fourth part of a **dollar**.

One dollar is 100 cents, and is written \$1.



$$\begin{array}{l} 4 \text{ quarters} = 100\text{¢} \\ 1 \text{ dollar} = 1 \text{ dollar} = \$1 \end{array}$$



Two quarters = 50¢.



Three quarters = 75¢



25¢



35, 45, 55

(count dimes by tens)



56, 57¢

Count the quarters first since they have the biggest cent-value.

1. Quarters and dimes. Write the total amount in cents.

<p>a.</p>	<p>b.</p>	<p>c.</p>
<p>d.</p>	<p>e.</p>	<p>f.</p>
<p>g.</p>	<p>h.</p>	<p>i.</p>

2. Quarters and nickels. Write the total amount in cents.

<p>a.</p> 	<p>b.</p> 	<p>c.</p> 
--	--	--

3. How much money? Write down the amount in cents.

<p>a.</p> 	<p>b.</p> 
<p>c.</p> 	<p>d.</p> 
<p>e.</p> 	<p>f.</p> 
<p>g.</p> 	<p>h.</p> 
<p>i.</p> 	<p>j.</p> 
<p>k.</p> 	<p>l.</p> 

4. How much is the total if you have:

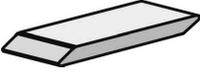
a. two dimes and a quarter

b. two dimes, four nickels

c. a dime, a nickel, six pennies

d. two quarters, three dimes, seven pennies

5. Cross out the coins you need to buy the item. Write how many cents you have left.

<p>a. </p> <p>39¢</p>  <p>Left _____¢</p>	<p>b. </p> <p>88¢</p>  <p>Left _____¢</p>	<p>c. </p> <p>54¢</p>  <p>Left _____¢</p>
<p>d. </p> <p>61¢</p>  <p>Left _____¢</p>	<p>e. </p> <p>97¢</p>  <p>Left _____¢</p>	<p>f. </p> <p>81¢</p>  <p>Left _____¢</p>
<p>g. </p> <p>73¢</p>  <p>Left _____¢</p>	<p>h. </p> <p>45¢</p>  <p>Left _____¢</p>	<p>i. </p> <p>26¢</p>  <p>Left _____¢</p>