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Foreword

Math Mammoth Grade 1 comprises a complete math curriculum for the first grade mathematics studies. The curriculum meets and exceeds the Common Core standards.

The main areas of study for first grade are:

1. The concepts of addition and subtraction, and strategies for addition and subtraction facts;

2. Developing understanding of place value up to 100;

3. Developing understanding and some basic strategies for two-digit addition and subtraction.

Additional topics we study in the first grade are telling time (whole and half hours), geometric shapes, measurement, and counting coins.

The portion of first grade included in this book, Part B, covers strategies for addition and subtraction facts (chapter 4), telling time and the calendar (chapter 5), shapes and measuring (chapter 6), adding and subtracting two-digit numbers and reading pictographs (chapter 7), and counting coins (chapter 8). The book 1-A covers addition concept, subtraction concept, and place value with two-digit numbers.

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 particular 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/**

And 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*

Chapter 4: Addition and Subtraction Facts
Introduction

This chapter provides lots of practice for learning and memorizing the basic addition and subtraction facts with numbers from 0 to 10. The Common Core Standards require children in the first grade to demonstrate fluency in addition and subtraction with numbers up to 10, and we aim for that goal.

Since this chapter is repetitive, consider studying it simultaneously with some other section of the curriculum, such as telling time, shapes, measuring, or counting coins. For example, the child could study the telling time and topics of this chapter each day, or study the two different chapters on alternate days. This is not compulsory but just a suggestion to "mix things up" in a somewhat spiral fashion.

The series of lessons entitled *Addition and Subtraction Facts With...* aim to help the student to memorize the basic facts for numbers from 0 to 10. We approach it from the concept of "fact families," which makes the process logical and structured. These lessons have a lot of repetition and practice for both subtraction and addition facts.

Many children may not need all the practice problems provided, so don't assign all of them by default. Use your judgment, and only assign a certain portion, such as half of them, at first. The rest of them can then be used later as a review. If assigning only half of the exercises is not enough, adjust as necessary.

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. 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 has not memorized these facts before the end of the chapter, don't worry. Go on with the curriculum, but keep practicing the facts with games, worksheets, drills, *etc.*, until the student has mastered them.

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

The Lessons in Chapter 4

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. (Regular playing cards with the face cards removed will work.)

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

At the beginning of his turn, a player may optionally take the top card from the pile. Then the player may optionally ask the player on his right for one card (like in "Go Fish": "Do you have a seven?"), and the player on the right must give it to him if he has it. Then the player whose turn it is may discard either: (a) a single "10" card by itself or (b) any *two* cards in his hand that add up to 10.

The winner is the player who first discards all cards from his hand.

Variations:
* Deal more than seven cards.
* Deal fewer cards if there are a lot of players or if the players are very young.
* Also allow players to discard a set of *three* cards that add up to 10.
* Instead of 10, players discard cards that add up to 9, 8, 11, or some other number.
* Use the face cards for 11, 12, and 13.

Some Went Hiding

You need: An amount of small objects that is equal to the sum you are studying. For example, to study the sums with 12, you need 12 marbles, or 12 blocks, or 12 of something else.

Rules: The first player shows the objects, then quickly hides SOME behind her back without showing how many she has. Then she shows the remaining objects to the next player to her right, who has to say how many "went hiding." If that player gives the right answer, then it becomes his turn to hide some and ask the next player to answer. If he gives the wrong answer, then he misses his turn, and the next player shows and hides the objects. This game appeals best to younger students.

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

Addition (or Subtraction) Challenge

You need: A standard deck of playing cards from which you remove the face 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: At the beginning of each round, each player receives two cards face up, and calculates their sum (adds). The player with the highest sum gets all the cards from the other players. Once there are no longer enough cards left in the pack to deal two cards to each player, players count their cards and 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 use those to resolve the tie.

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

Helpful Resources on the Internet

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

Fun Addition and Subtraction Games from multiplication.com
Practice your basic facts with these simple games that appeal to children.
http://www.multiplication.com/games/addition-games
http://www.multiplication.com/games/subtraction-games

Number Eaters
A game where you eat the addition (or subtraction) problems if the sum (difference) is a given number.
The games start out really easy and with small numbers. You can choose from many options Practices
number bonds (sums of 4, 5, 6, etc.).
http://hoodamath.com/games/numbereaters.php

Acing Math
A large collection of math games for grades K-6 that you can play with a standard deck of cards.
http://www.pepnonprofit.org/uploads/2/7/7/2/2772238/acing_math.pdf

Fun Math Card Game
A simple and fun card game for addition and 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

Guess the Number
Guess the number to unlock the phone and see the picture! You have 5 chances. There are 3 number
ranges to choose from.
http://www.abcya.com/guess_the_number.htm

Rock Hopper
Help Rock Hopper reach the large rock on the other side of the pond by clicking for him to jump on rocks
that add up to the target number.
http://www.eduplace.com/kids/mw/swfs/rockhopper_grade2.html

Math Car Racing Game
Choose which operation and which numbers you want to practice. Then, answer the questions quickly and
correctly to win the race.
http://mrnussbaum.com/speedmath/

Big Yellow Bus
Place the children in the correct seats on the bus by solving the addition problems.
http://mrnussbaum.com/the-big-yellow-bus-ipad.html

Number Invaders
Practice addition and subtraction facts while saving the planet from "number invaders".
http://www.mathplayground.com/balloon_invaders_addsub.html

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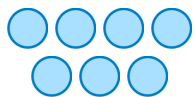
You have 7 balls. First you take away 1 ball, and then you take away 2 more balls. You will have 4 balls left. $7 - 1 - 2 = 4$.

$7 - 1 - 2 = ?$

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

a.
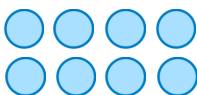
$8 - 2 - 3 =$ _____

$8 - 5 - 2 =$ _____

$8 - 1 - 3 =$ _____

b.
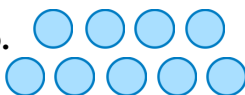
$9 - 3 - 1 =$ _____

$9 - 4 - 2 =$ _____

$9 - 2 - 5 =$ _____

c.
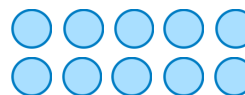
$10 - 5 - 3 =$ _____

$10 - 6 - 2 =$ _____

$10 - 1 - 4 =$ _____

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 were 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 one at a time:	OR you can subtract their total:
8 – 2 – 3 \ / 6 – 3 = 3	8 – 2 – 3 \ / 8 – 5 = 3
First take away 2. That leaves 6. Then, from 6, subtract 3. That leaves 3.	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 by either method.

a.	b.	c.
7 – 2 – 3 = _____	9 – 7 – 1 = _____	7 – 5 – 1 = _____
9 – 2 – 6 = _____	6 – 2 – 2 = _____	10 – 6 – 1 = _____

4. Solve. Compare the two problems and their results.

a.	b.	c.
10 – 3 – 2 = _____	7 – 3 – 3 = _____	9 – 6 – 1 = _____
10 – 3 – 3 = _____	7 – 4 – 3 = _____	8 – 6 – 1 = _____

5. Match the subtraction problems to the correct pictures.
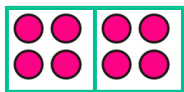
a. 8 – 2 – 2 – 2 – 2 = 0
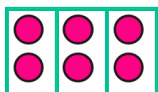
b. 8 – 4 – 4 = 0

c. 6 – 2 – 2 – 2 = 0

d. 6 – 3 – 3 = 0
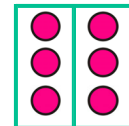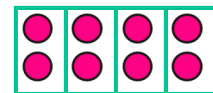
Puzzle Corner   Here are some problems with four numbers!

9 – 3 – 2 – 1 = _____   10 – 1 – 2 – 1 = _____   8 – 4 – 1 – 2 = _____

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Chapter 5: Time
Introduction

The fifth chapter covers reading an analog clock to whole hours and to half hours, and some basics of time and the calendar.

In the first lesson we use an analog clock that only has the hour hand. We omit the minute hand for a reason: this way the child can concentrate on the hour hand only, and learning to tell whole and half hours becomes much easier. We also practice telling what time it is one hour or a half-hour later than a given time.

The next lesson focuses on minutes. The aim of this lesson is to learn that one hour is 60 minutes, that 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 the "30" part is the number of minutes, so half an hour is just 30 minutes.

This lesson also includes a few exercises about reading the clock to five-minute intervals using a special clock that includes the numbers for the minute hand; however, these can be skipped if desired, because in second grade, the student will get a lot of practice 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 for the student to understand that the clock starts at 12 midnight, and goes through all the A.M. hours from 1 to 12 until it is 12 noon, and then goes through all of the P.M. hours from 1 to 12 until it is 12 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 pages in their math book.

The Lessons in Chapter 5

Helpful Resources on the Internet

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

Interactive Clock to Practice Telling Time
Show children how to tell time with this interactive clock (analog or digital). You can limit the time to the half hour, quarter hour, or to 10, 5, and 1 minute. Generate a random time to let students practice telling time.
http://www.homeschoolmath.net/interactives/telling_time.php

Flashcard Clock
Read the analog clock and type in the time in digital format. Very clear clock and good fast response!
http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard_clock.htm

Teaching Time
Analog and digital clock games and worksheets. Also has an interactive "class clock" to demonstrate time.
http://www.teachingtime.co.uk/

Clockwise
Enter a time, and the clock will run until it reaches it, or the clock stops running, and you type in the time at which it stopped.
http://www.shodor.org/interactivate/activities/ClockWise/

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, calculating the time that has passed, adding or subtracting time, converting time units, and changing time zones. 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 or digital). Three different levels: whole hours, half hour, or quarter hour.
http://www.sheppardsoftware.com/mathgames/earlymath/clock_shoot.htm

AM and PM times
This page includes a brief explanation of AM and PM, as well as a practice activity and games.
http://www.aaamath.com/k8_ampm.htm

Time Balloons
Help MathPup fetch the time balloon that matches the launch pad time.
http://www.mathnook.com/math/timeballoons.html

AM or PM
Practice relating AM and PM to typical events during the day.
http://www.mathgames.com/skill/2.19-am-or-pm

Calendar Song
This girl sings the months of the year (with gestures).
http://www.youtube.com/watch?v=IwdQegySW-0

Calendar Quiz
Click on the correct date on the calendar to answer questions such as, "What is the first Monday of this month?"
http://www.softschools.com/math/calendar/activities/calendar_game/

Create Your Own Calendar
Choose a month and a year, then add your own text to each day and generate the calendar.
http://www.janbrett.com/calendar/calendar1.php4

Months Game
Help Tom the Zebra get ready for bed by clicking and dragging the months into the correct order.
http://www.roythezebra.com/reading-games/high-frequency-words-months.html

Days of the Week Game
Help Tom the Zebra get ready for bed by clicking and dragging the days of the week into the correct order.
http://www.roythezebra.com/reading-games/high-frequency-words-days.html

It's a Date
An online quiz about dates on a calendar.
http://www.beaconlearningcenter.com/WebLessons/ItsADate/default.htm

Months of the Year
Drag the month names onto their matching month numbers.
https://www.transum.org/Maths/Activity/Time/Months.asp

Monkey Fun Game
Practice months of the year and ordinal numbers with this interactive game.
http://www.eslgamesplus.com/months-and-ordinal-numbers-esl-vocabulary-game-activity-online/

Memory Game
A memory game for the days of the week.
http://www.eslgamesplus.com/days-of-the-week-esl-vocabulary-game/

Whole and Half Hours

In this lesson, the clock only has one hand - the HOUR hand.
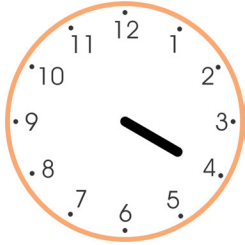
The hour hand points to four -
it is four hours, or "four o'clock."
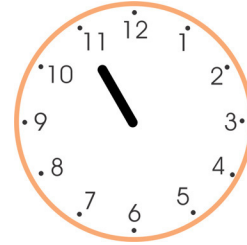
The hour hand points to eleven -
it is eleven hours, or "eleven o'clock".

The hour hand moves slowly 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.

one hour passes

another hour passes
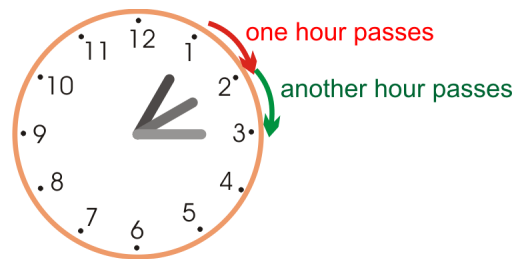
On this clock, the hour hand pointed to 5
when it was five o'clock.

Then it moved to **halfway** between 5 and 6.
We say it is **half past five**.
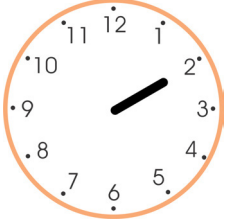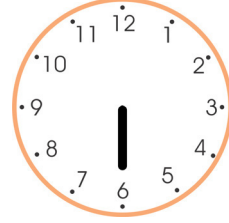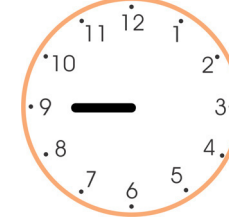
It takes the hour hand one-half hour to move from five
to halfway between five and six.

Here the hour hand has moved past eight o'clock, and is halfway
between 8 and 9. We say it is half past eight.
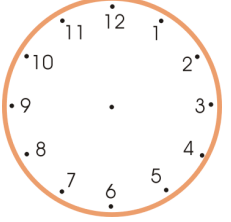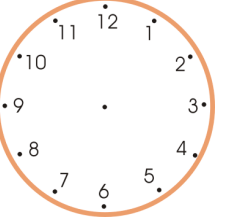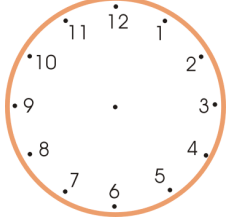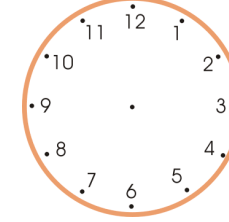
In half an hour, it will be nine o'clock.
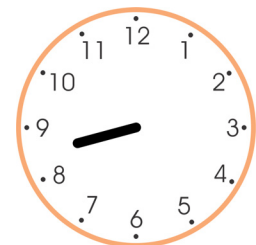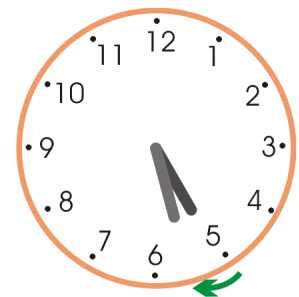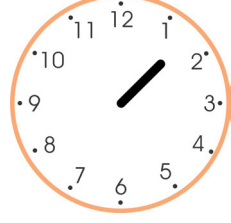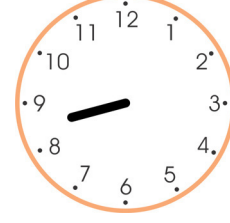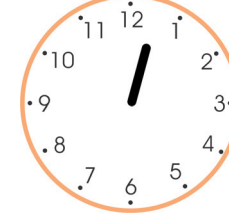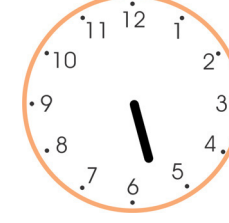
1. Write the time under each clock face.

a. _____ o'clock	**b.** _____ o'clock	**c.** _____ o'clock	**d.** _____ o'clock
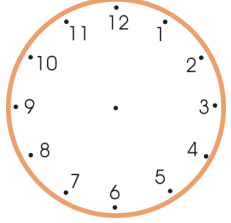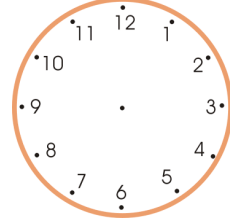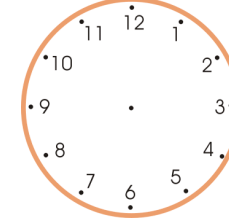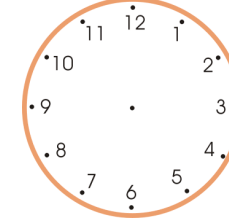
2. Draw the hour hand.

a. Five o'clock	**b.** Eight o'clock	**c.** Twelve o'clock	**d.** Seven o'clock
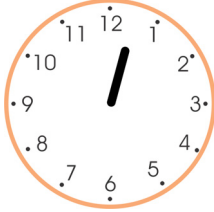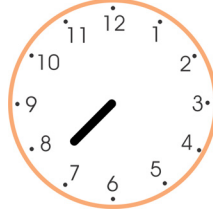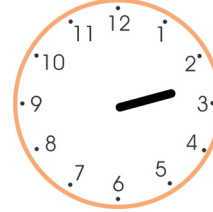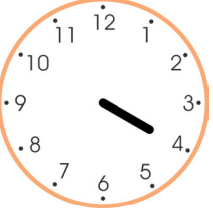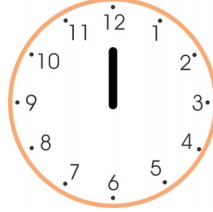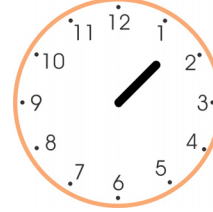
3. Write the time.

a. Half past _____	**b.** Half past _____	**c.** Half past _____	**d.** Half past _____
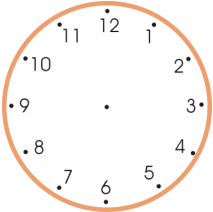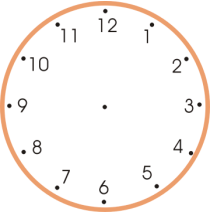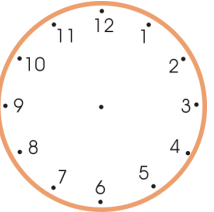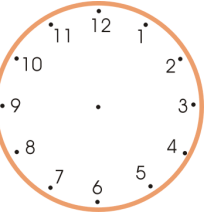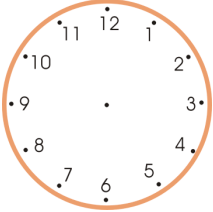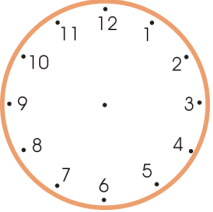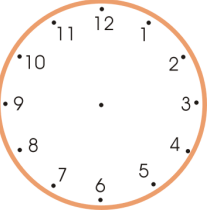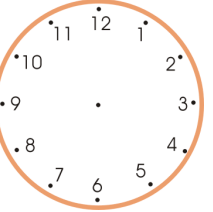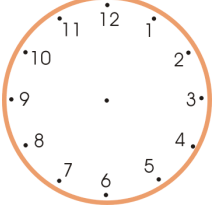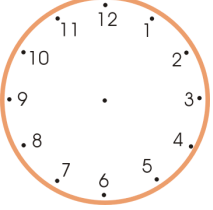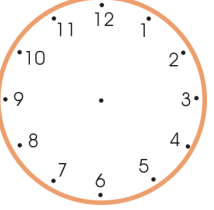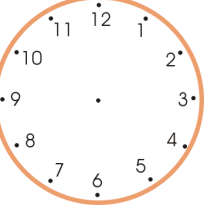
4. Draw the hour hand.

a. Half past six	**b.** Half past three	**c.** Half past two	**d.** Half past four

5. Write the time!

a. _____

_____

b. _____

_____

c. _____

_____

d. _____

_____

e. _____

_____

f. _____

_____

g. _____

_____

h. _____

_____

6. Draw an hour hand on each clock. In the second row, show the time a half-hour later.
   In the third row, show the time another half-hour later than the clock in the second row.

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

40

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Chapter 6: Shapes and Measuring
Introduction

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

If you have the electronic version of this book (a PDF file), you will need to print the pages at 100%, instead of using "shrink to fit," "print to fit," or similar options. If you print using "shrink to fit", some exercises about measuring in inches and centimeters will not come out right but will be "shrunk" compared to reality.

The goals of this section are:

- The child can identify common shapes, such as triangles, squares, rectangles, circles, and quadrilaterals.

- The child can draw lines with a ruler.

- The child understands that measuring length is a process of iterating (repeating) the unit of measure.

The lessons in this chapter can seem quite easy, but they are preparing the child for later studies and laying a proper foundation for geometric understanding. For example, dividing shapes into parts not only makes the child familiar with the properties of the original shape and of its parts, but also helps to build an understanding of part-whole relationships for the study of fractions.

For more practice, children can draw lines and shapes however they are able, divide shapes into other shapes, and draw patterns on grid paper. A tangram or a set of plastic shapes are also excellent aids.

Don't forget to also check out the videos at https://www.mathmammoth.com/videos/ .

The Lessons in Chapter 6

Helpful Resources on the Internet

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

Shifting Shapes
Figure out what the shape is by viewing parts of it through a small opening! Click on the "eye" button to see it in its entirety.
http://www.ictgames.com/YRshape.html

X-ray Math Geometry Shapes
Run the mystery shapes through the x-ray machine to identify them. Then, place them where they belong.
http://www.mathnook.com/math/x-ray-math-geometry-shapes.html

Matching Shapes Game
Click and drag the shapes from the box below to the matching shapes above to help the dogs and cats!
http://www.abcya.com/shapes_geometry_game.htm

Complete the Patterns with Shapes
You can choose to just practice, or to race an airplane.
http://www.abcya.com/shape_patterns.htm

Polygon Matching Game
A simple matching game with shapes.
http://www.mathplayground.com/matching_shapes.html

Polygon Playground
Drag various colorful polygons to the work area to make your own creations!
http://mathcats.com/explore/polygons.html

Shapes Identification Quiz from ThatQuiz.org
Identify common two-dimensional shapes in this multiple-choice online quiz. You can modify the quiz parameters to your liking.
www.thatquiz.org/tq-f/math/shapes/

Interactive Tangram Puzzles
Try to create the shape using all 7 pieces provided. Shapes cannot overlap or go outside of the lines.
http://www.abcya.com/tangrams.htm

Logic Tangram game
Note: This game uses only a four-piece "Tangram". Use logic and spatial reasoning skills to assemble the four pieces into the given shape.
http://www.mathplayground.com/tangrams.html

FRACTIONS

Identifying Halves and Quarters
Choose whether the items are cut into halves or quarters.
https://www.studyladder.com/games/activity/halves-and-quarters-3367

Spring Flowers
Choose either a 'half' or a 'quarter' fraction card and click on the fraction. Then, place the card on the matching color and fraction shape on the flower bed. Choose "1/4 - 1/2" for this game.
http://www.counton.org/games/map-fractions/spring/

MEASURING

Finding Lengths with a Ruler
Measure lengths in inches or in centimeters.
http://media.abcya.com/games/measuring/flash/measuring.swf

Measure It!
Click on the ruler to measure a red bar.
http://www.funbrain.com/measure/index.html

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.
http://www.fuelthebrain.com/games/inchy-picnic/

3-DIMENSIONAL SHAPES

Interactive 3-Dimensional Shapes
Visualize and rotate solids with this interactive 3-D shape explorer.
http://www.homeschoolmath.net/interactives/3D_shapes.php

3-D Shapes – Interactive
Review 2-D shapes and how they form the basis of 3-D shapes. This page also includes definitions, vocabulary, and examples of 3-D shapes.
http://coolsciencelab.com/2D_3D_shapes.swf
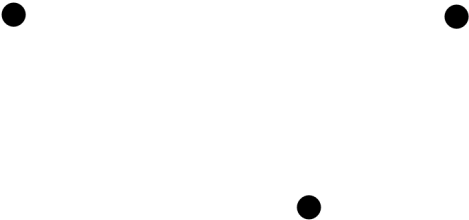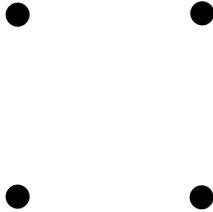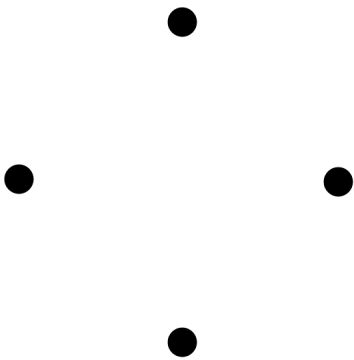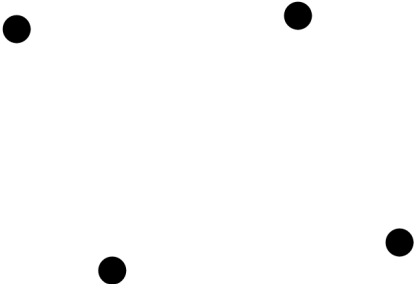
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Drawing Basic Shapes

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

a. triangle / square / rectangle /
other four-sided shape

b. triangle / square / rectangle /
other four-sided shape

c. triangle / square / rectangle /
other four-sided shape

d. triangle / square / rectangle /
other four-sided shape

e. triangle / square / rectangle /
other four-sided shape

f. triangle / square / rectangle /
other four-sided shape

Practicing Basic Shapes and Patterns

1. In each figure, draw a straight line <u>with a ruler</u> from one black dot to the other black dot.
   Color the two new shapes with different colors. Inside each new shape write a letter:
   S if it's a square, T if it's a triangle, R if it's a rectangle, Q if it's another quadrilateral
   (four-sided shape).
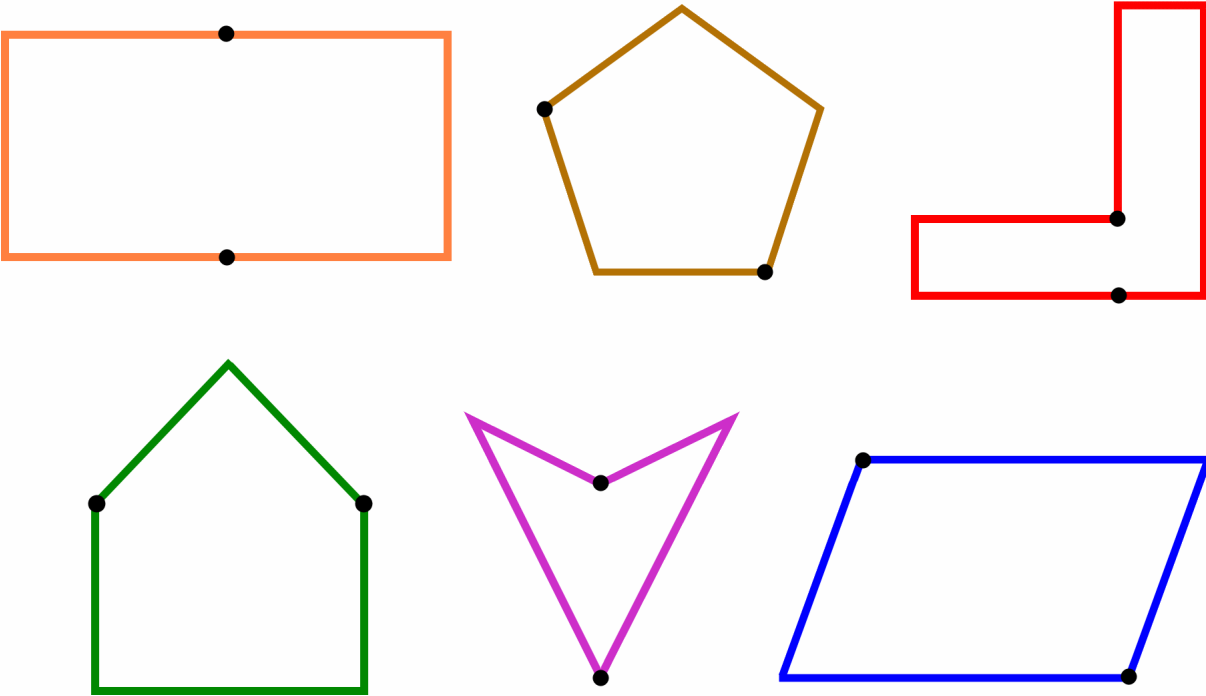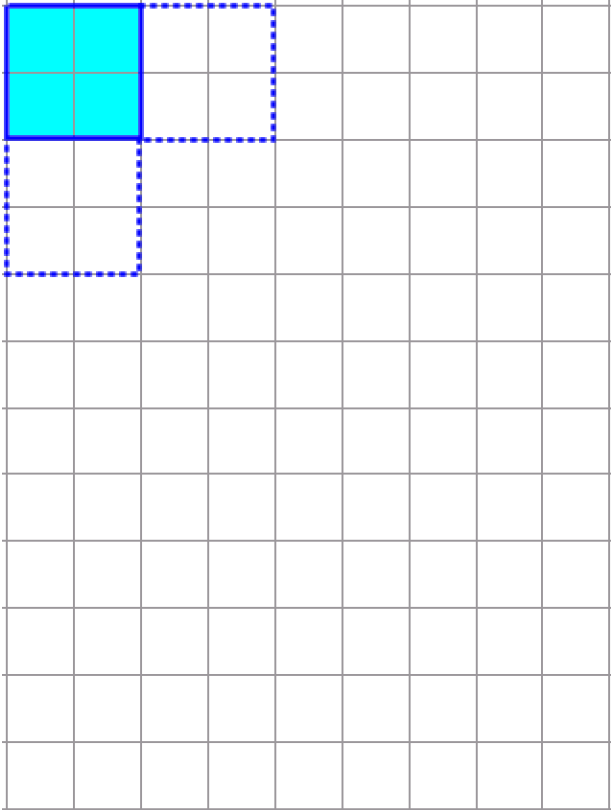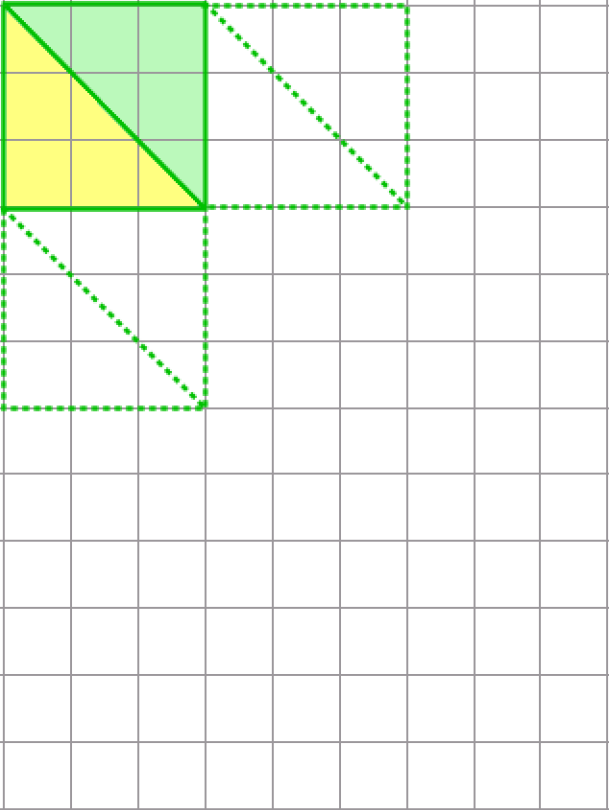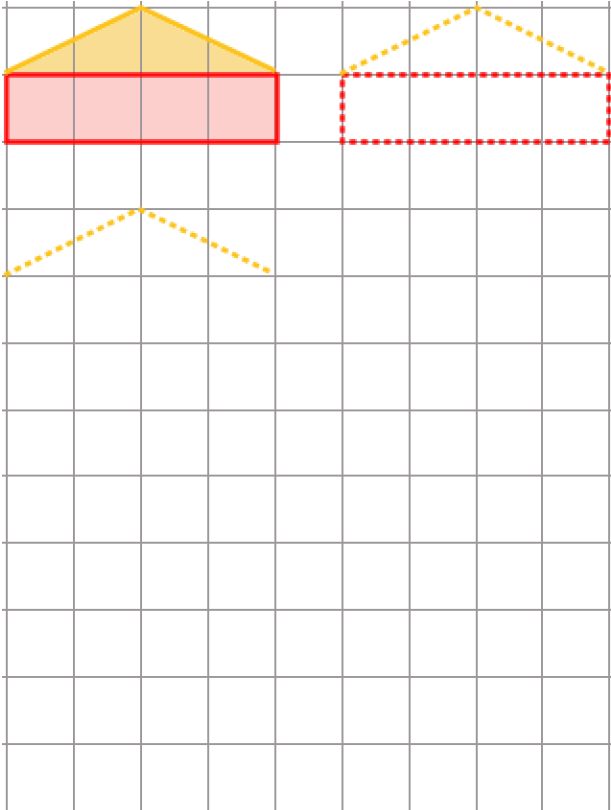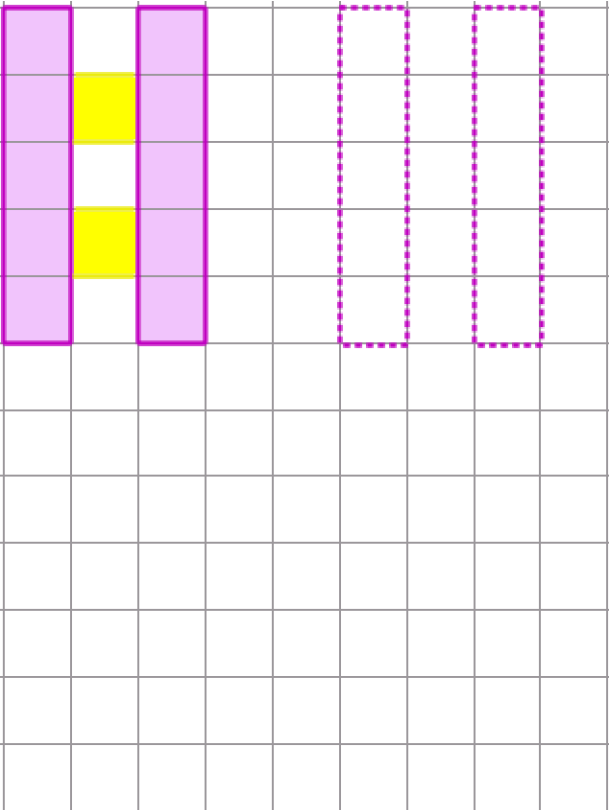
2. Join each dot to a dot on the other side with straight lines (horizontal and vertical lines)
   so that you get a grid of squares. <u>Use a ruler</u> and draw neatly.
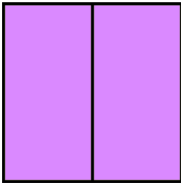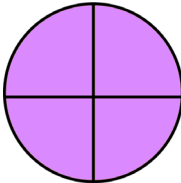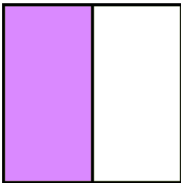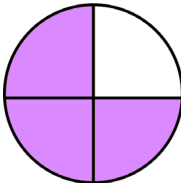
Then color
the squares using
this pattern
(ye = yellow):

blue	green	blue	green
ye	purple	ye	purple
pink		pink	

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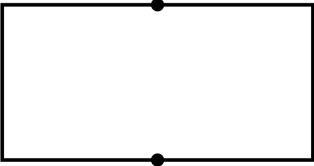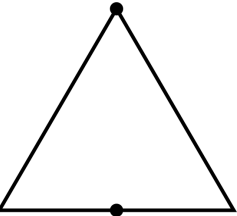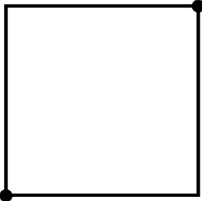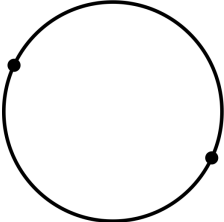
3. Repeat the patterns to fill the grids.
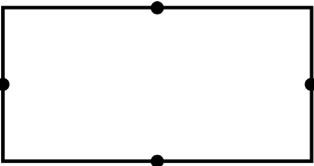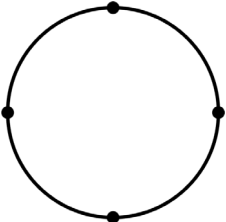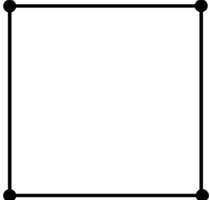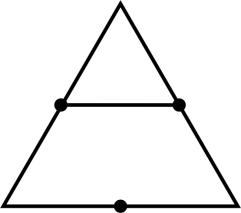
Halves and Quarters

This square is divided into two parts that are the same. The parts are **halves**. Each part is <u>one half</u>.	This circle is divided into four parts that are the same. The parts are called **fourths** or **quarters**. Each part is <u>one fourth</u> or <u>one quarter</u>.
Here, one-half of the square is colored. The other half is white.	Here, three-fourths of the circle is colored. One-fourth of it is white.
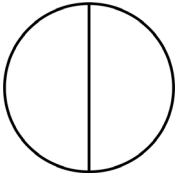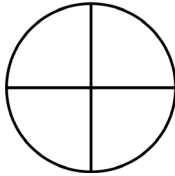
1. Divide these shapes into halves by drawing a straight line from dot to dot. Then color them as the instructions say.

a. Color one half.	**b.** Color two halves.	**c.** Color one half.	**d.** Color both halves, but different colors.
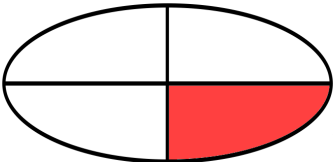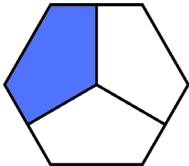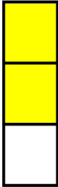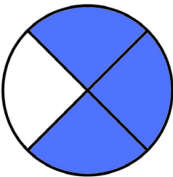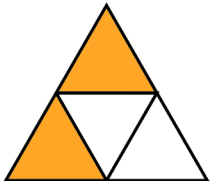
2. Divide these shapes into fourths by drawing two straight lines from dot to dot. Then color them as the instructions say.

a. Color 1 fourth.	**b.** Color 3 fourths.	**c.** Color 2 fourths.	**d.** Color 4 fourths = the WHOLE triangle.

7. Color the whole pie. Then tell or write how many pieces it is, and what kind of pieces.

a.

The whole pie is

_3_ _thirds_.

b.

The whole pie is

_____ _____.

c.

The whole pie is

_____ _____.

8. Complete these sentences like the example so that they say how many pieces are colored, what kind of pieces they are, and what shape they belong to. Look at the example.

a. _1_ _f o u r t h_ of

the _o v a l_ is colored.

b. _____ _____ of

the _h e x a g o n_ is colored.

c. _____ _____ of

the _t r a p e z o i d_ is colored.

d. _____ _____ of

the _____ are colored.

e. _____ _____ of

the _____ are colored.

f. _____ _____ of

the _____ are colored.

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Measuring Length

In this lesson, we measure things to find <u>how long</u> or <u>how wide</u> they are as compared to other things. For all measuring, you need a **measuring unit**. You <u>repeat</u> the measuring unit many times, and compare it to the thing you are measuring.

1. Measure <u>how wide</u> or <u>how long</u> things are, using shoes as measuring units.
   You need: two small shoes and two bigger shoes.

   a. Measure a desk or a table. Place one shoe at the edge of the table and the other one directly behind it. Then move the first shoe in front of the second, and so on. Keep count.

   The table is _____ small shoes wide.

   The table is _____ big shoes wide.

   b. Measure two more things now, using both the small shoes and the big shoes.
   Some ideas:

   - how wide the blackboard is;   - how long your friend is when lying on the floor;
   - how tall your chair is;   - how long the room is.

   The _____ is _____ small shoes wide.

   The _____ is _____ big shoes wide.

   The _____ is _____ small shoes wide.

   The _____ is _____ big shoes wide.

2. Ryan noticed that each daddy shoe was about <u>three</u> baby shoes.
   Ryan measured his desk and it was four daddy-shoes wide, like this:

   How many baby-shoes wide is Ryan's desk?
   Hint: Draw the baby shoes under the daddy shoes.

Exploring Measuring

Besides measuring length, we also measure things to find how heavy something is, how much liquid it holds, or how much space it takes, as compared to other things.

1. Find <u>five</u> things you can carry, some lighter and some heavier. Put them in order from the lightest to the heaviest. You can draw the things or write them in the space below.

2. Order these things from lightest to heaviest by writing 1, 2, and 3 next to them. Don't just go by which picture looks bigger. Think how heavy these things would be in real life.

a.

b.

c.

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Measuring Lines in Inches

This line is 1 inch long. ├───────┤

We also write "1 in." for short.

1. How many inches are end-to-end?

a. ├───────────┤├───────────┤ _____ inches

b. ├───────┤├───────┤├───────┤├───────┤ _____ inches

c. ├───────┤├───────┤├───────┤ _____ inches

d. ├───────┤├───────┤├───────┤├───────┤├───────┤ _____ inches

2. How many inches long are these items?

_____ in.

| 1 | 2 | 3 | 4 | 5 | 6 |

_____ in.

_____ in.

_____ in.

| 1 | 2 | 3 | 4 | 5 | 6 |

_____ in.

Measuring Lines in Centimeters

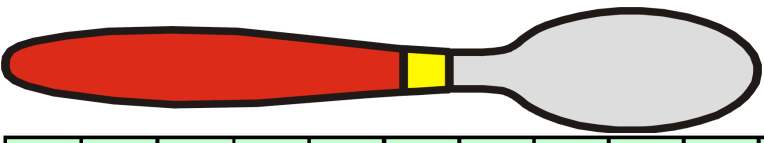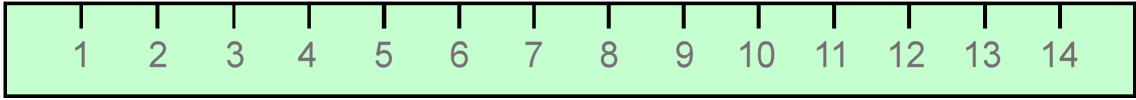You can find out how long things are in *centimeters*.

This line is 1 centimeter long: ⊢—⊣
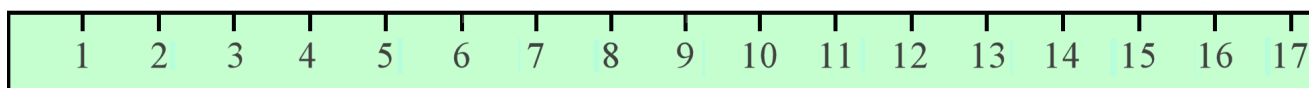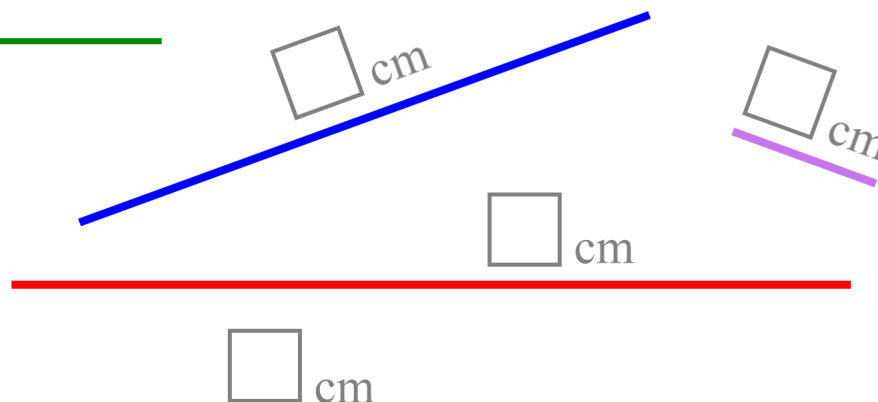
A centimeter is written in its short form as "cm."
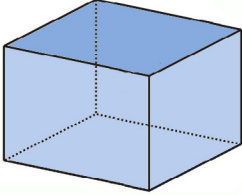This pencil is 6 cm long.

1   2   3   4   5   6

1. How many centimeters long are these things?

a. _____ cm

b. _____ cm

c. _____ cm

d. _____ cm

1   2   3   4   5   6   7   8   9   10   11   12   13   14

e. _____ cm

2. Measure the lines with a ruler. (If you don't have one, cut out the ruler at the bottom of the page.)

☐ cm

☐ cm

☐ cm

☐ cm

☐ cm

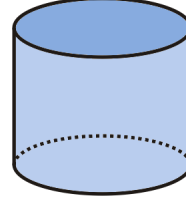1   2   3   4   5   6   7   8   9   10   11   12   13   14   15   16   17
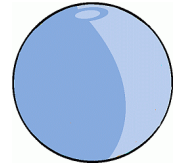
Three-Dimensional Shapes

This is a **box**. It is also called a "rectangular prism."

A **cube** is a box, too, but all of its edges are the same length.

A **cylinder** has a circle on the bottom and on the top.

This is a **ball**, or sphere.

1. Are these things in the shape of a *box* or a *cube*? Underline the right choice.

a.

box *or* cube

b.

box *or* cube

c.

box *or* cube

d.
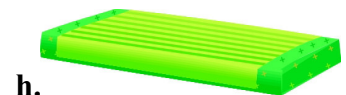
box *or* cube

e.

box *or* cube

f.

box *or* cube

g.

box *or* cube

h.

box *or* cube

2. Find four things in your classroom or at home in the shape of a *box*. Put them in order from the smallest to the biggest.

   I found _____, _____,

   _____, and _____.

3. Find two things in your classroom or at home in the shape of a *cube*, one smaller and one bigger.

   I found _____ and _____.

Exploring Measuring

Besides measuring length, we also measure things to find how heavy something is, how much liquid it holds, or how much space it takes, as compared to other things.

1. Find <u>five</u> things you can carry, some lighter and some heavier. Put them in order from the lightest to the heaviest. You can draw the things or write them in the space below.

2. Order these things from lightest to heaviest by writing 1, 2, and 3 next to them. Don't just go by which picture looks bigger. Think how heavy these things would be in real life.
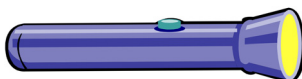
a.
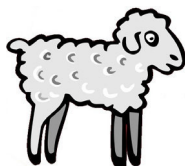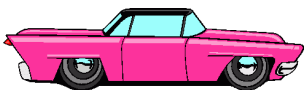
b.

c.

3. If you have a bathroom scale, step on it and measure how much you weigh. Weigh some other things, also. If your scale measures in pounds, write "lb" after the number, such as 45 lb. If it measures in kilograms, write "kg", such as 22 kg.

I weigh _____ _____.

_____ weighs _____ _____.

_____ weighs _____ _____.

_____ weighs _____ _____.

> For all measuring, you need a **measuring unit**. You <u>repeat</u> the measuring unit a lot of times to compare it to the thing you are measuring.

4. Measure how much water a pot holds.
   You need: water, a large coffee cup, a food jar, and a pot or other big container.

   Fill the cup with water and pour into the pot. Repeat until the pot is full.
   Keep count of how many cups full of water you need to fill the pot.

   The pot holds _____ cups full of water.

   Now do the same using a jar:

   The pot holds _____ jars of water.

5. Measure how much water a jar or a cup holds.
   You need: water, a small measuring cup, a food jar, a drinking glass.

   Fill the measuring cup with water and pour it into the food jar.
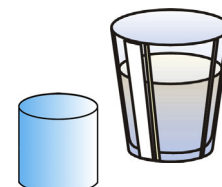   Repeat until the jar is full. Keep count.

   The jar holds _____ measuring cups of water.

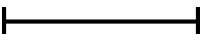   Now do the same with a large drinking glass.

   The glass holds _____ measuring cups of water.

6. Peter measured how much water fits into a bucket. First he measured it using a large drinking glass. The bucket holds 32 big drinking glasses. Then he measured it using a <u>smaller</u> drinking glass. Which is correct: did the bucket hold 19 or 53 smaller drinking glasses?
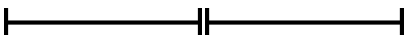
Measuring Lines in Inches
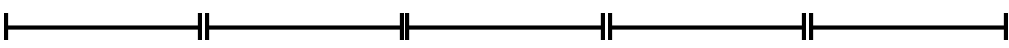
This line is 1 inch long. ├────────┤

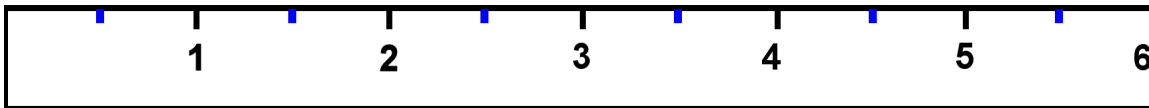We also write "1 in." for short.

1. How many inches are end-to-end?

a. ├──────┼┼──────┤ _____ inches

b. ├──────┼┼──────┼┼──────┼┼──────┤ _____ inches

c. ├──────┼┼──────┼┼──────┤ _____ inches

d. ├──────┼┼──────┼┼──────┼┼──────┤ _____ inches

2. How many inches long are these items?

_____ in.

| 1 | 2 | 3 | 4 | 5 | 6 |

_____ in.

_____ in.

_____ in.

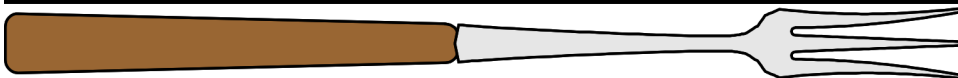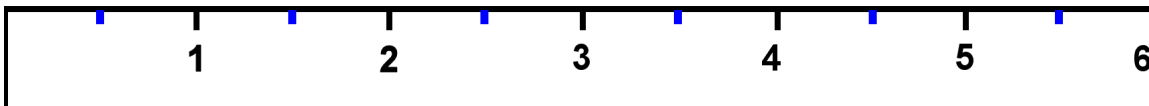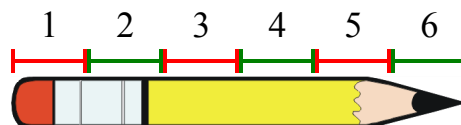| 1 | 2 | 3 | 4 | 5 | 6 |

_____ in.

Measuring Lines in Centimeters

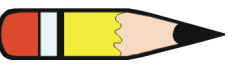You can find out how long things are in *centimeters*.

This line is 1 centimeter long: ⊢—⊣
A centimeter is written in its short form as "cm."
This pencil is 6 cm long.

1   2   3   4   5   6

1. How many centimeters long are these things?

a. _____ cm

b. _____ cm

c. _____ cm

d. _____ cm

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 |

e. _____ cm

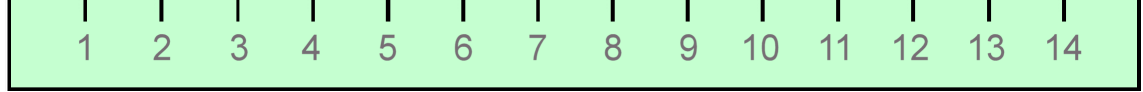2. Measure the lines with a ruler. (If you don't have one, cut out the ruler at the bottom of the page.)

☐ cm

☐ cm

☐ cm

☐ cm

☐ cm

| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 |

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Three-Dimensional Shapes

This is a **box**. It is also called a "rectangular prism."

A **cube** is a box, too, but all of its edges are the same length.

A **cylinder** has a circle on the bottom and on the top.

This is a **ball**, or sphere.

1. Are these things in the shape of a *box* or a *cube*? Underline the right choice.

a.

box *or* cube

b.

box *or* cube

c.

box *or* cube

d.

box *or* cube

e.

box *or* cube

f.

box *or* cube

g.

box *or* cube

h.

box *or* cube

2. Find four things in your classroom or at home in the shape of a *box*. Put them in order from the smallest to the biggest.

I found _____, _____,

_____, and _____.

3. Find two things in your classroom or at home in the shape of a *cube*, one smaller and one bigger.

I found _____ and _____.

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Chapter 7: Adding and Subtracting Within 0-100
Introduction

The seventh chapter progressively presents a variety of easy addition and subtraction problems with numbers from 0 to 100. It includes these topics:

- Adding a two-digit number and a single-digit number without regrouping (carrying) (for example, 23 + 4 or 56 + 3).
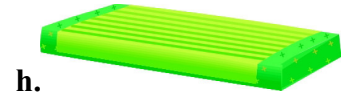
- Subtracting a one-digit number from a two-digit number without regrouping (borrowing): For example, 45 − 3 or 67 − 6.

- Adding or subtracting two-digit numbers in columns (one number under the other) without regrouping.

- Recognizing that sometimes in adding two-digit numbers we need to regroup—to combine ten ones to make a new ten. In this grade level, we approach this concept using visual models only, and not in an abstract manner.

- Practicing specific mental math strategies for adding and subtracting numbers under 20 (such as 7 + 9 or 15 − 8): a trick with nine and eight, adding just one more than a known sum, and using the relationship between addition and subtraction to subtract. The actual memorization of these basic addition and subtraction facts is left for second grade.

The Lessons in Chapter 7

Helpful Resources on the Internet

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

Base Ten Blocks Tool
Drag base ten blocks into the work area, line them up, and see their total value with this interactive tool.
http://www-k6.thinkcentral.com/content/hsp/math/hspmath/na/common/itools_int_9780547584997_/basetenblocks.html

Adding Two-Digit Concentration
Match the addition with the correct answer in this addition memory game.
http://www.math-play.com/two-digit-addition-game/adding-two-digits-concentration.html

Speed Grid Addition
Find numbers on the grid that add up to the given number.
http://www.oswego.org/ocsd-web/games/SpeedGrid/Addition/urikares.html

Double Digit Addition
Match the addition problem with the correct sum. Enjoy!
http://www.quia.com/mc/818288.html

Addition Level 2
A matching game where you add a one-digit number and a two-digit number.
http://www.quia.com/mc/65798.html

Bridging Shuttle
"Bridging Through Ten" means adding enough to make a ten first, then adding the rest. Get a "flight plan", or a problem to solve. First add enough to make a ten (type the number needed into the oval), and press the red button. Then, into the other oval, type the rest, and press the red button.
http://www.ictgames.com/bridging.html

Bridging – Addition
Practice bridging through 10 with single digit and double digit addition in this online quiz.
http://www.downlands.dorset.sch.uk/parents/addition/Add13%20bridging.swf

Froggy Hop
Find either 10 more or 1 more than a given number.
http://www.ictgames.com/frog.html

Fruit Splat Subtraction
Click on the fruit with the correct answer. Choose level 4 or 6 to practice topics studied in this chapter.
http://www.sheppardsoftware.com/mathgames/fruitshoot/fruitshoot_subtraction.htm

Repair the Slide
Repair the slide by dragging two pieces into each gap. Each pair of numbers should add up to 20.
http://www.topmarks.co.uk/Flash.aspx?b=maths/addition

Adding and Subtracting – Whole Tens
Practice adding or subtraction single digit numbers to multiples of ten.
http://www.snappymaths.com/mixed/addsub1d/interactive/addsub1dm10/addsub1dm10.htm

Puzzle Pics Addition
Place the puzzle piece on the missing number in the grid and watch as the mystery picture appears.
Change the target number to 20 for this game.
http://www.mathplayground.com/puzzle_pics_addition_facts_to_20.html

Clear It! Addition game.
Create a number sentence that equals the target number.
http://www.abcya.com/clear_it_addition.htm

Number Bonds 20
Click on the number balls that add up to 20.
http://www.mathplayground.com/number_bonds_20.html

Decomposing Numbers
Click and drop the carts onto the bottom track so that both trains have an equal number of sections. Level 1 has 6 questions and uses numbers within 10. Level 2 practices concepts of this chapter.
http://www.turtlediary.com/game/decomposing-numbers-up-to-20.html

Car Wash Addition
Choose the correct answer to the equation to wash the cars. After the cars are washed, it's race time!
Choose to practice fact families with 8 or 9 for this game.
http://www.multiplication.com/games/play/car-wash-addition

Catch the Stars
Catch the stars that add up to the number on the bucket. Click on the bucket to change the number. Don't let any stars fall away, you have the answers in your bucket!
http://www.sheppardsoftware.com/mathgames/catchthestars/addition/catchthestars20.htm

Pearl Search
Click on the clam with the correct answer. See how many pearls you can collect!
http://www.sheppardsoftware.com/mathgames/popup/popup_subtraction.htm

Word Problems - Add & Subtract within 20
Practice addition and subtraction with these interactive word problems.
http://www.abcya.com/first_grade_word_problems_add_subtract.htm

Math Stack
Click on the blocks to solve the equations. Don't let the blocks stack up! Choose levels 3, 4, and 5.
http://www.abcya.com/math_stack.htm

Fly High Addition
Fly your plane safely through the storm clouds by answering the questions correctly.
http://www.multiplication.com/games/play/flying-high-ii-addition

Patty's Paints Subtraction
Help Patty paint cars. Then drive your newly painted car in a fun race!
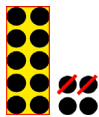http://www.multiplication.com/games/play/pattys-paints-subtraction

Pictograph Quiz
Use the pictograph to answer questions about some children and their books.
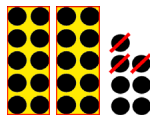http://www.softschools.com/math/data_analysis/pictograph/games/

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Subtracting Without Borrowing

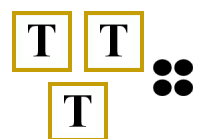|		
14 – 2 = _12_	**27 – 3 = _24_**	Think of the *ones digits* only. The tens do not change because we don't have to subtract from the tens.
"I can subtract 4 – 2 = 2; the 10 stays the same."	"I can subtract 7 – 3 = 4; the 20 stays the same."	
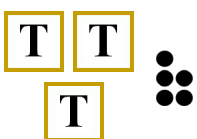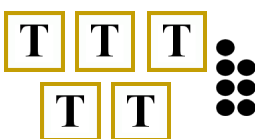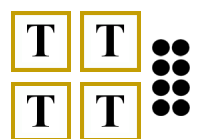
1. Subtract and compare. The top problem helps you solve the bottom one!

a. 8 – 2 = _6_ 28 – 2 = _2 6_	**b.** 7 – 6 = _____ 17 – 6 = _____	**c.** 7 – 7 = _____ 67 – 7 = _____
d. 6 – 6 = _____ 56 – 6 = _____	**e.** 9 – 8 = _____ 49 – 8 = _____	**f.** 5 – 2 = _____ 95 – 2 = _____

2. Subtract. Write a "helping problem" below that uses only numbers less than 10.

a. 54 – 2 = _____ 4 – 2 = _____	**b.** 76 – 2 = _____ ____ – ____ = _____	**c.** 88 – 4 = _____ ____ – ____ = _____

3. Subtract. Cross out dots. Each box marked with a "T" stands for a ten.

a.	b.	c.	d.
35 – 4 = _____	57 – 7 = _____	48 – 2 = _____	34 – 1 = _____
35 – 3 = _____	57 – 5 = _____	48 – 4 = _____	34 – 2 = _____
35 – 2 = _____	57 – 3 = _____	48 – 6 = _____	34 – 4 = _____

4. Subtract.

a.	b.	c.	d.
77 – 6 = _____	47 – 2 = _____	57 – 4 = _____	15 – 3 = _____
22 – 1 = _____	75 – 1 = _____	86 – 2 = _____	98 – 4 = _____
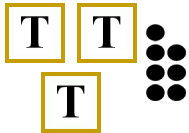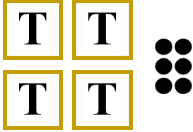
5. Find the missing addends.

a. 10 + _____ = 15	**b.** 21 + _____ = 22	**c.** 65 + _____ = 69
32 + _____ = 38	94 + _____ = 95	33 + _____ = 36
72 + _____ = 79	44 + _____ = 48	91 + _____ = 98

6. Solve.

a. In the morning Katherine sold 21 pictures that she had painted, and in the afternoon she sold 7. How many pictures did she sell in total?

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 all the ones (the dots) so that only the whole tens are left.

a.	b.	c.
37 – _____ = 30	46 – _____ = 40	28 – _____ = _____
d. 57 – ____ = _____	**e.** 85 – ____ = _____	**f.** 69 – ____ = _____

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.** $42 = 40 + \bigcirc$
$\bigcirc + \rule{2em}{0.4pt} = \rule{2em}{0.4pt}$		$\rule{2em}{0.4pt} + \bigcirc = \rule{2em}{0.4pt}$

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.**
$88 - 0 = \rule{2em}{0.4pt}$	$95 - 2 = \rule{2em}{0.4pt}$	$48 - 1 = \rule{2em}{0.4pt}$
$88 - 1 = \rule{2em}{0.4pt}$	$85 - 2 = \rule{2em}{0.4pt}$	$46 - 1 = \rule{2em}{0.4pt}$
$88 - 2 = \rule{2em}{0.4pt}$	$75 - 2 = \rule{2em}{0.4pt}$	$44 - 1 = \rule{2em}{0.4pt}$
$88 - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - 1 = \rule{2em}{0.4pt}$
$88 - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$
$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$
$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$
$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$	$\rule{1.5em}{0.4pt} - \rule{1.5em}{0.4pt} = \rule{2em}{0.4pt}$

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Chapter 8: Coins
Introduction

In this chapter, we study counting coins. Since the book has only pictures for the coins, practicing with real coins is of course advisable. If your book is printed in black and white, it helps to color the pennies orange before doing the exercises.

The goals are:

- The student can identify and count pennies, nickels, dimes, and quarters.

- The student can count the money in coins when the sum of the cents is at most 100.

In the first lesson, we start out by counting only dimes and pennies, which is identical to practicing place value with tens and ones, as we did in chapter 3. The same lesson introduces the nickel. The child is instructed to count two nickels as 10 cents, which makes counting many coins much easier.

Students practice counting pennies, nickels, and dimes for two lessons. The following lesson then introduces the quarter. Instruction is applied as a framework to build step-by-step; children first practice counting only quarters and dimes, then quarters and nickels, and then all the coins. If counting quarters is difficult for your child, you can delay this topic and study it again in second grade.

The lessons also include exercises for making given money amounts with coins and using coins in simple shopping situations.

The Lessons in Chapter 8

Helpful Resources on the Internet

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

Worksheets for Counting Coins
Generate randomized worksheets for counting money. You can choose whether to count coins or bills, how many coins or bills to include in each problem, how many problems to include, and so on.
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/

Interactive Count Money Activity
This interactive tool allows children to practice counting money or the teacher to illustrate how to count money using a whiteboard. By pushing the "Automatic" button, you're given an amount of money to count. Alternatively you can drag any coins and bills to the work area yourself. The "Total" button then reveals the correct answer.
http://www.homeschoolmath.net/interactives/count_money.php

Matching Game – Coin Amounts
Match the coins to the correct amount. Get a 1000 point bonus per round if you get all correct!
http://www.sheppardsoftware.com/mathgames/matching/memoryMath_coins_level1.htm

Money Bingo
Count the money and then click on the correct amount on the bingo grid.
http://www.abcya.com/money_bingo.htm

Math Mine Money Game
Click on "money" in the menu of options. Then, using the arrow keys to navigate, help MathPup fetch the amount of money needed. Get the exact amount and don't go over!
http://www.mathnook.com/math/mathmine.html

Counting Money Game
Count the coins and then click on the correct value.
http://www.turtlediary.com/game/counting-money.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

Add Value of Items Money Game
Find the values of the items purchased in a store and fill in the total price in this fun shopping game.
http://www.turtlediary.com/game/add-the-value-of-items.html

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.
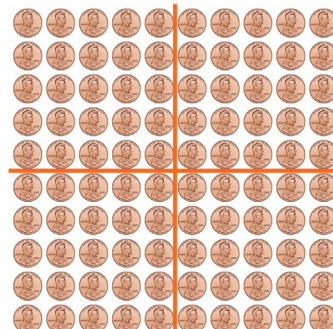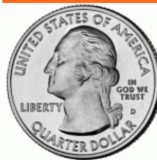
4 quarters
1 dollar

=

100¢
1 dollar = $1

Two quarters = 50¢.

Three quarters = 75¢

25¢   35, 45, 55   56, 57¢
(count dimes by tens)

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

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

a.

b.

c.

d.

e.

f.

g.

h.

i.

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

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

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

a.	**b.**
c.	**d.**
e.	**f.**
g.	**h.**
i.	**j.**
k.	**l.**

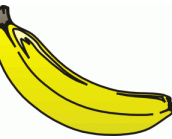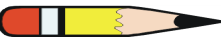4. How much is the total if you have:

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.

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

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