

math

# MAMMOTH

## Grade 1 - B Worktext

**A**ddition and subtraction facts within 0 - 10

**C**lock and calendar

**S**hapes and measuring

**A**dding and subtracting within 0 - 100

**C**ounting coins



L  
i  
g  
h  
t  
  
B  
l  
u  
e  
  
S  
e  
r  
i  
e  
s

---

# Contents

Foreword .....	5
----------------	---

## Chapter 4: Addition and Subtraction Facts

Introduction .....	6
Addition and Subtraction Facts with 4 and 5 .....	10
Addition and Subtraction Facts with 6 .....	12
Addition and Subtraction Facts with 7 .....	15
Addition and Subtraction Facts with 8 .....	17
Addition and Subtraction Facts with 9 .....	21
Addition and Subtraction Facts with 10 .....	24
Subtracting More Than One Number .....	28
Review—Facts with 6, 7, and 8 .....	30
Review—Facts with 9 and 10 .....	32

## Chapter 5: Time

Introduction .....	35
Whole and Half Hours .....	38
Minutes and Half Hours .....	42
Time Order .....	46
AM and PM .....	48
The Calendar .....	51
Review—Half Hours .....	53

## Chapter 6: Shapes and Measuring

Introduction .....	54
Basic Shapes .....	57
Playing with Shapes .....	60
Printable Shapes .....	61
Drawing Basic Shapes .....	63

Practicing Basic Shapes and Patterns .....	66
Halves and Quarters .....	69
Measuring Length .....	73
Exploring Measuring .....	77
Measuring Lines in Inches .....	79
Measuring Lines in Centimeters .....	82
Three-Dimensional Shapes .....	84
Review .....	86

### **Chapter 7: Adding and Subtracting Within 0-100**

Introduction .....	87
Refresh Your Memory .....	90
Adding Without Carrying .....	92
Subtracting Without Borrowing .....	95
Adding or Subtracting Two-Digit Numbers .....	98
Completing the Next Ten .....	102
Going Over Ten .....	105
Subtracting from Whole Tens .....	109
Add Using “Just One More” .....	111
A “Trick” with Nine and Eight .....	113
Adding within 20 .....	116
Subtract to 10 .....	120
Using Addition to Subtract .....	122
Some Mixed Review .....	125
Pictographs .....	128
Review .....	130

### **Chapter 8: Coins**

Introduction .....	134
Counting Dimes, Nickels, and Cents .....	136
Counting Dimes, Nickels, and Cents 2 .....	139
Quarters .....	141
Practicing with Money .....	144
Review—Coins .....	146

---

# Foreword

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

1. Learning the concepts of addition and subtraction, and strategies for remembering addition and subtraction facts (chapters 1-2 and chapter 4);
2. Developing understanding of whole number relationships and place value up to 100 (chapter 3 and chapter 7);
3. Developing the concept that measuring is a process of iterating basic units of length or some other measure (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 telling time to the half hour (chapter 5) and counting coins (chapter 8).

The portion of first grade included in this book, Part B, covers strategies for addition and subtraction facts (chapter 4), telling time and reading 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.

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 the child’s studies. While the 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. After a bit of a break and a fresh approach, the chances are good that the student will be able to get past the concept that he or she got stuck on before.

Math Mammoth aims to concentrate on a few major topics at a time to 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 will never need an occasional extra review. Indeed, when each major topic is presented in its own chapter, this gives you more freedom to plan the course of study yourself to set appropriate times for review. In fact, I encourage you to plan your mathematics school year in terms of the topics covered, instead of in terms of a certain range of pages from a book.

In order to realize any needed extra 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. Chapter Four contains a lot of pages with problems that practice addition and subtraction facts, so you might choose to “save” some these as an “extra worksheets file,” which makes them available to use for later review.

*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 call for children to demonstrate fluency in addition and subtraction with numbers up to 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 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.

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

Besides practicing the facts of addition and subtraction with the help of fact families, the student will also solve word problems, fill in number patterns, get used to a symbol, such as , 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

	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 More Than One Number .....	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. (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 her turn, a player may optionally take the top card from the pile. Then the player may optionally ask the player on her right for one card (like in “Go Fish”: “Do you have a seven?”), and the player on the right must give it to her 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 her 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. 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 4 The Brain

Practice your basic facts with these simple games that appeal to children.

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

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

## 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](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](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](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://mrnuessbaum.com/speedmath/>

## Big Yellow Bus

Place the children in the correct seats on the bus by solving the addition problems.

<http://mrnuessbaum.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](http://www.mathplayground.com/balloon_invaders_addsub.html)

**Math Stack**

Solve the problems by clicking on the falling blocks which have the correct answer.

[http://www.abcya.com/math\\_stack.htm](http://www.abcya.com/math_stack.htm)

**Math Facts Game**

Solve the problems correctly and you get to practice shooting baskets.

[http://www.abcya.com/math\\_facts\\_game.htm](http://www.abcya.com/math_facts_game.htm)

**Sum of All Dice**

Throw the dice, and then add up the total to find the correct answer.

[http://www.abcya.com/sum\\_of\\_all\\_dice.htm](http://www.abcya.com/sum_of_all_dice.htm)

**Kitten Match Addition**

Click on balls of yarn on the table to make the target number. Be quick, or the other kittens will find the matches first!

[http://www.mathplayground.com/ASB\\_KittenMatch.html](http://www.mathplayground.com/ASB_KittenMatch.html)

**Domino Differences - subtraction game with dominoes**

Try to make subtraction sentences using dominoes and number cards.

<http://www.learn-with-math-games.com/subtraction-activities.html>

**Monkey Drive Math Games**

Solve the problems to open the banana barrels for the “monkey driver”. Choose addition or subtraction.

<http://www.sheppardsoftware.com/mathgames/monkeydrive/monkeymath.htm>

**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>

**Online Subtraction Flash Cards**

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

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

**Relationship between Add and Subtract**

Choose which number should replace X in this online quiz.

<http://www.aaaknow.com/lessonQuiz.php?slug=quiz2relationship&menu=First%20Grade>

**Tux Math**

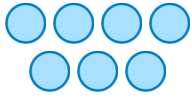
A versatile arcade software for math facts with many options. Includes all operations.

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



(This page intentionally left blank.)

## Subtracting More Than One Number

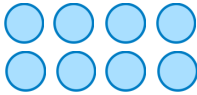


$$7 - 1 - 2 = ?$$

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

a.

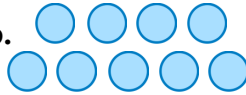


$$8 - 2 - 3 = \underline{\quad}$$

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

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

b.

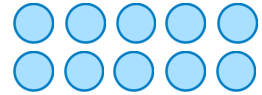


$$9 - 3 - 1 = \underline{\quad}$$

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

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

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 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:

$$8 - 2 = 6$$

$$6 - 3 = 3$$

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

OR you can subtract their total:

$$8 - 2 - 3 = 3$$

$$8 - 5 = 3$$

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  $8 - 5 = 3$ .

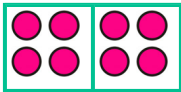
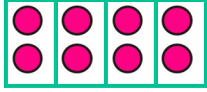
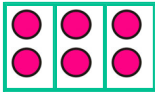
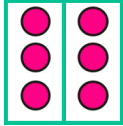
3. Subtract by either method.

<b>a.</b>	<b>b.</b>	<b>c.</b>
$7 - 2 - 3 = \underline{\quad}$	$9 - 7 - 1 = \underline{\quad}$	$7 - 5 - 1 = \underline{\quad}$
$9 - 2 - 6 = \underline{\quad}$	$6 - 2 - 2 = \underline{\quad}$	$10 - 6 - 1 = \underline{\quad}$

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

<b>a.</b>	<b>b.</b>	<b>c.</b>
$10 - 3 - 2 = \underline{\quad}$	$7 - 3 - 3 = \underline{\quad}$	$9 - 6 - 1 = \underline{\quad}$
$10 - 3 - 3 = \underline{\quad}$	$7 - 4 - 3 = \underline{\quad}$	$8 - 6 - 1 = \underline{\quad}$

5. Match the subtraction problems to the correct pictures.

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

**Puzzle Corner**

Here are some problems with four numbers!

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

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

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

(This page intentionally left blank.)

---

## Chapter 5: Time

### Introduction

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

The main goal of this chapter is to learn to tell time to the whole and half hours using an analog clock. 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 talks about minutes. The main focus in 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 has 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 because the student will get a lot of practice reading the clock to the nearest five minutes in second grade.

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

	page	span
Whole and Half Hours .....	38	<i>4 pages</i>
Minutes and Half Hours.....	42	<i>4 pages</i>
Time Order .....	46	<i>2 pages</i>
AM and PM .....	48	<i>3 pages</i>
The Calendar .....	51	<i>2 pages</i>
Review - Half Hours .....	53	<i>1 page</i>

## 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 hours, quarter hours, 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](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](http://www.teachingtreasures.com.au/maths/FlashcardClock/flashcard_clock.htm)

### Teaching Time

Analogue 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 runs to a time, and you type it in.

<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](http://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](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 hours, or quarter hours.

[http://www.sheppardsoftware.com/mathgames/earlymath/clock\\_shoot.htm](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](http://www.aaamath.com/k8_ampm.htm)

### **Time Balloons**

Help MathPup fetch the time balloon that matches the launchpad 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/](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>

### **12 Months of the Year**

Drag the months into the correct order and help the monkeys get a banana.

[http://www.abcya.com/months\\_of\\_the\\_year.htm](http://www.abcya.com/months_of_the_year.htm)

### **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/>

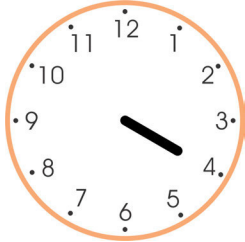
### **Memory Game**

For the days of the week.

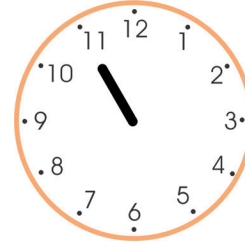
<http://www.eslgamesplus.com/days-of-the-week-esl-vocabulary-game/>

# 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.”

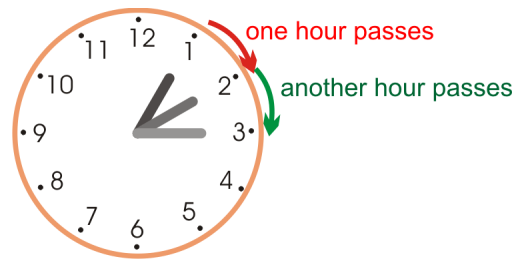


The hour hand points to eleven - it is eleven hours, or “eleven o’clock”.

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.



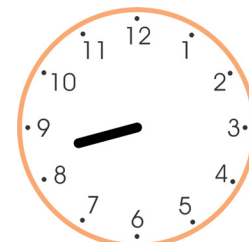
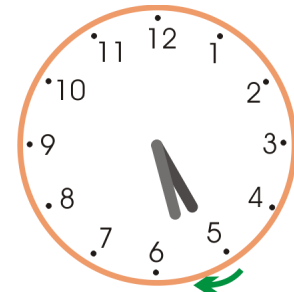
On this clock, the hour hand pointed to 5 when it was five o’clock.

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.

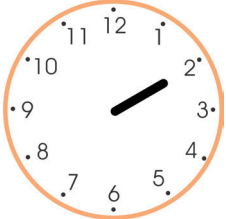
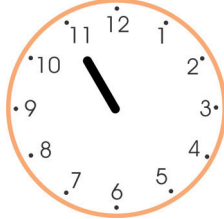
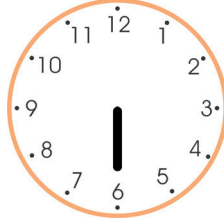
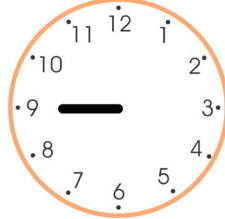
Here the hour hand has moved past eight o’clock, and is halfway between 8 and 9. We say it is half past eight.

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

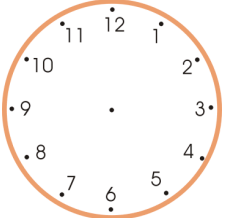
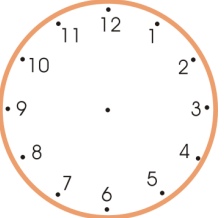
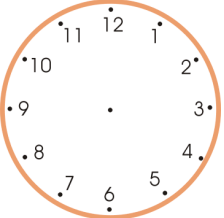
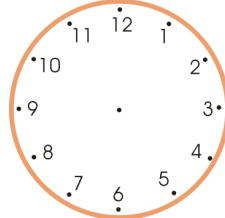




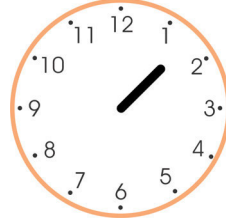
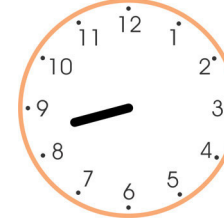
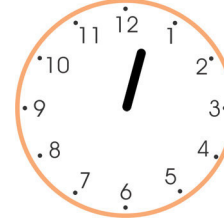
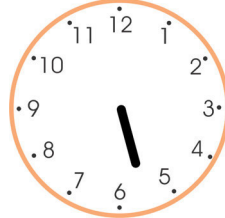
1. Write the time under each clock face.

 <p>a. _____ o'clock</p>	 <p>b. _____ o'clock</p>	 <p>c. _____ o'clock</p>	 <p>d. _____ o'clock</p>
---	---	--	---

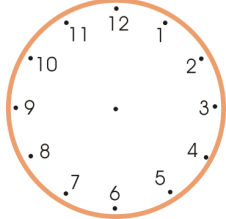
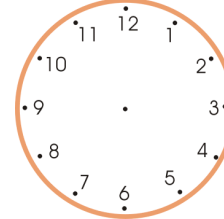
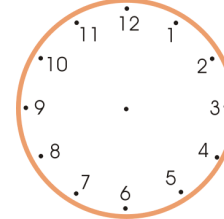
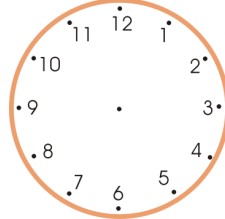
2. Draw the hour hand.

 <p>a. Five o'clock</p>	 <p>b. Eight o'clock</p>	 <p>c. Twelve o'clock</p>	 <p>d. Seven o'clock</p>
--	---	---	---



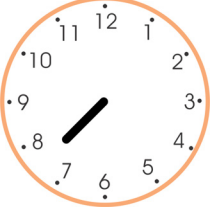
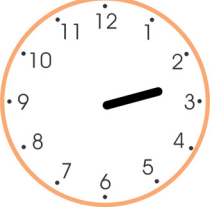




3. Write the time.

 <p>a. Half past _____</p>	 <p>b. Half past _____</p>	 <p>c. Half past _____</p>	 <p>d. Half past _____</p>
---	---	--	---

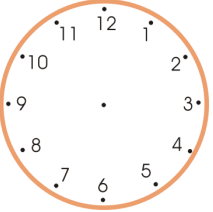
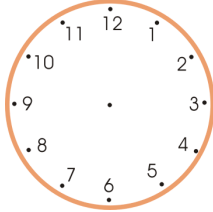
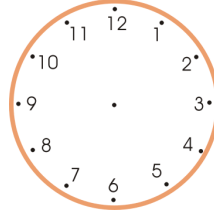
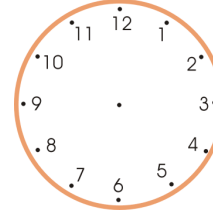
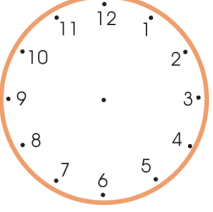
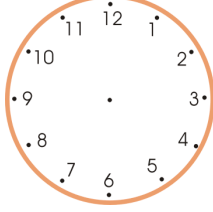
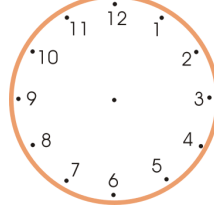
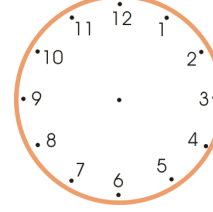
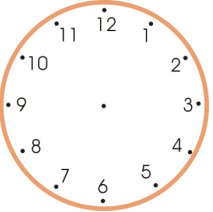
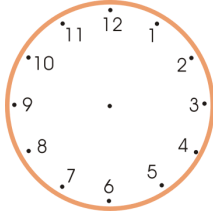
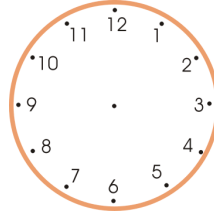
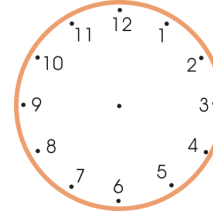
4. Draw the hour hand.

 <p>a. Half past six</p>	 <p>b. Half past three</p>	 <p>c. Half past two</p>	 <p>d. Half past four</p>
---	---	--	--

5. Write the time!

 <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 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.

<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>				

(This page intentionally left blank.)

---

# 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'll need to print the file 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 won't come out right but will be "shrunk" compared to reality.

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

The lessons in this chapter can be quite easy, but they are preparing the student for later studies. For example, dividing shapes into parts not only makes the student more familiar with the properties of the original shape and its parts, but also helps to build an understanding of the relationships of parts to a whole for the later study of fractions. These concepts may seem easy to us, and even to your child, but they're necessary to lay a proper foundation for geometric understanding.

For additional practice, students can draw lines and other shapes however they are able to, divide them to other shapes, and let draw patterns on grid paper. A tangram or a set of plastic shapes are also excellent aids.

### The Lessons in Chapter 6

	page	span
Basic Shapes .....	57	3 pages
Playing with Shapes .....	60	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.

### 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](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](http://www.abcya.com/shape_patterns.htm)

### Polygon Matching Game

A simple matching game with shapes.

[http://www.mathplayground.com/matching\\_shapes.html](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/](http://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 in halves or quarters.

<https://www.studyladder.com/games/activity/identifying-halves-and-quarters-3555>

### 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 inches or in centimeters.

<http://www.abcya.com/measuring.htm>

### 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](http://www.homeschoolmath.net/interactives/3D_shapes.php)

### 3-D Shapes – Interactive

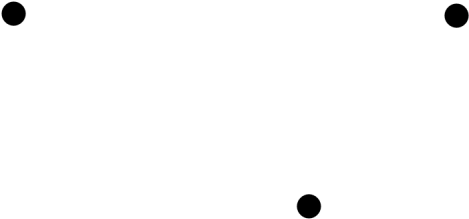
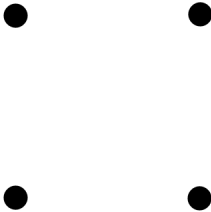


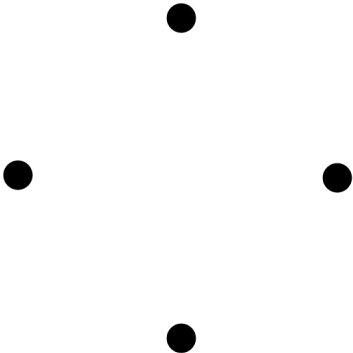
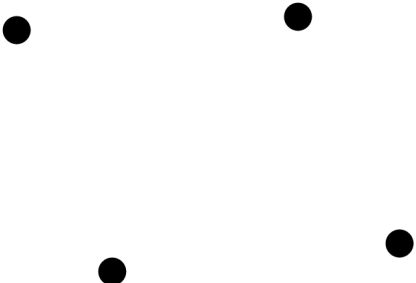
Review 2-D shapes and how they form the basis of 3-D shapes. This page also includes definitions, vocabulary, and examples of 3-D shapes.

[http://www.bgfl.org/bgfl/custom/resources\\_ftp/client\\_ftp/ks2/maths/3d/index.htm](http://www.bgfl.org/bgfl/custom/resources_ftp/client_ftp/ks2/maths/3d/index.htm)

(This page intentionally left blank.)

# Drawing Basic Shapes

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

 <p>a. triangle / square / rectangle / other four-sided shape</p>	 <p>b. triangle / square / rectangle / other four-sided shape</p>
 <p>c. triangle / square / rectangle / other four-sided shape</p>	 <p>d. triangle / square / rectangle / other four-sided shape</p>
 <p>e. triangle / square / rectangle / other four-sided shape</p>	 <p>f. 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.** In this space try to draw four dots in this space so that you get a rectangle.

**c.** Draw a rectangle. This time, try using a book to make the corners square.

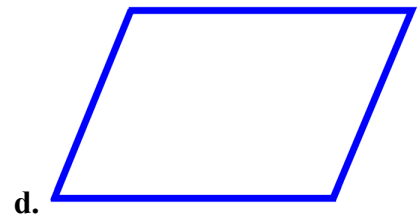
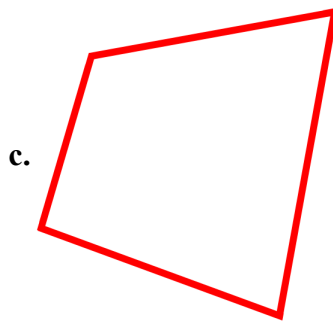
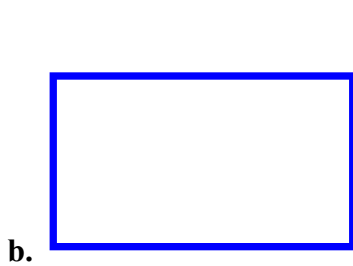
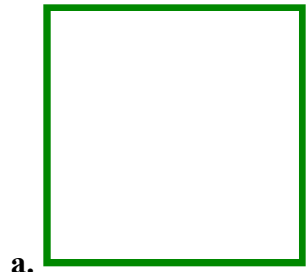
3. Figures (a), (b), (c), and (d) below are all quadrilaterals (four-sided shapes).  
 In each shape, draw a line from one corner to the opposite corner.

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? \_\_\_\_\_

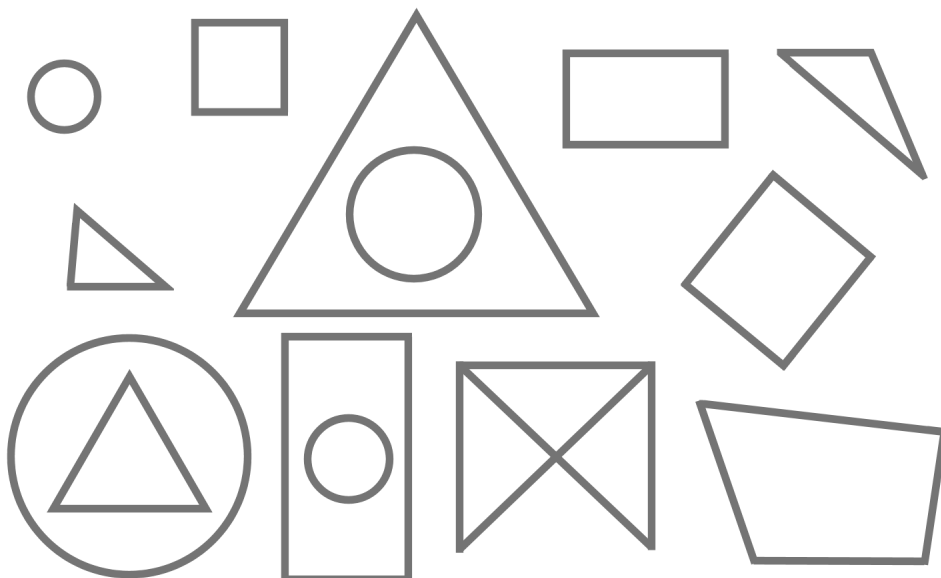


4. Choose a color for each kind of shape, and color them!

Triangles are \_\_\_\_\_. Circles are \_\_\_\_\_.

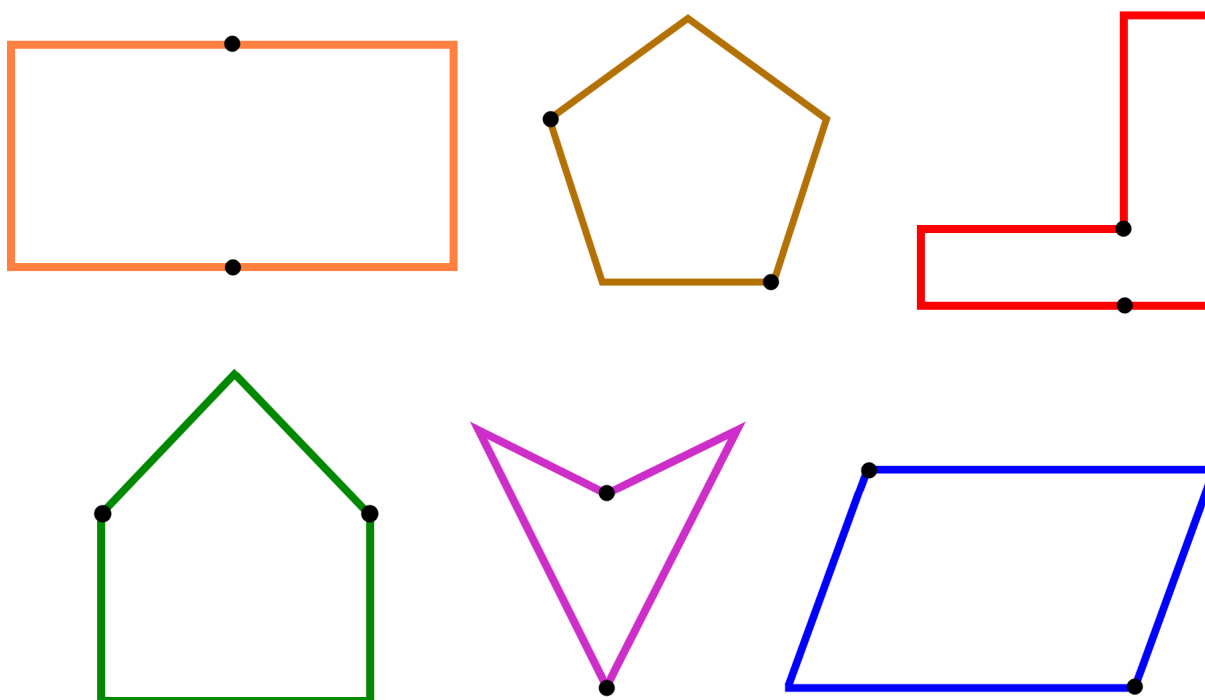
Squares are \_\_\_\_\_. Rectangles are \_\_\_\_\_.

Other four-sided shapes are \_\_\_\_\_.



## Practicing Basic Shapes and Patterns

1. In each figure, draw a straight line with a ruler 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).



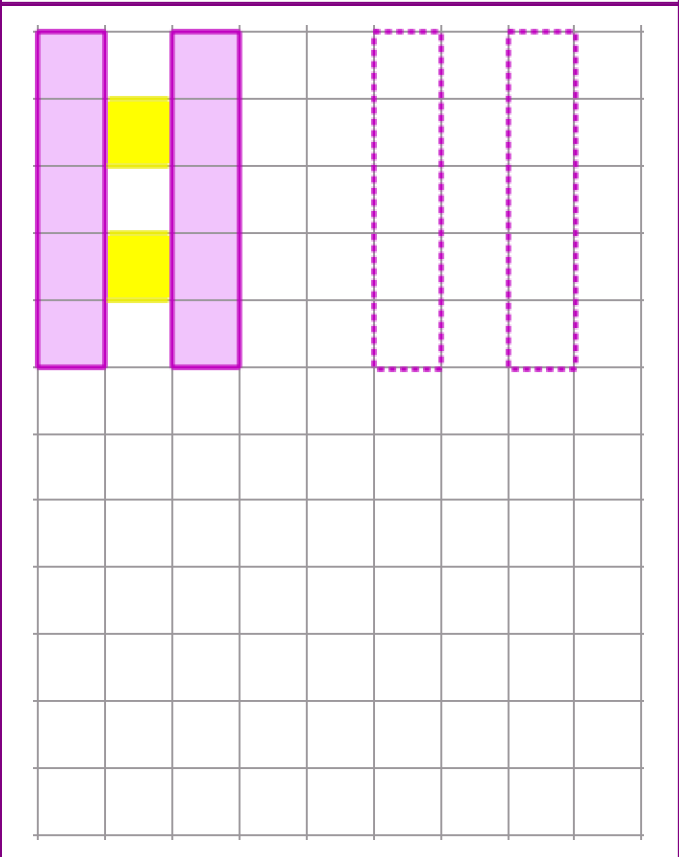
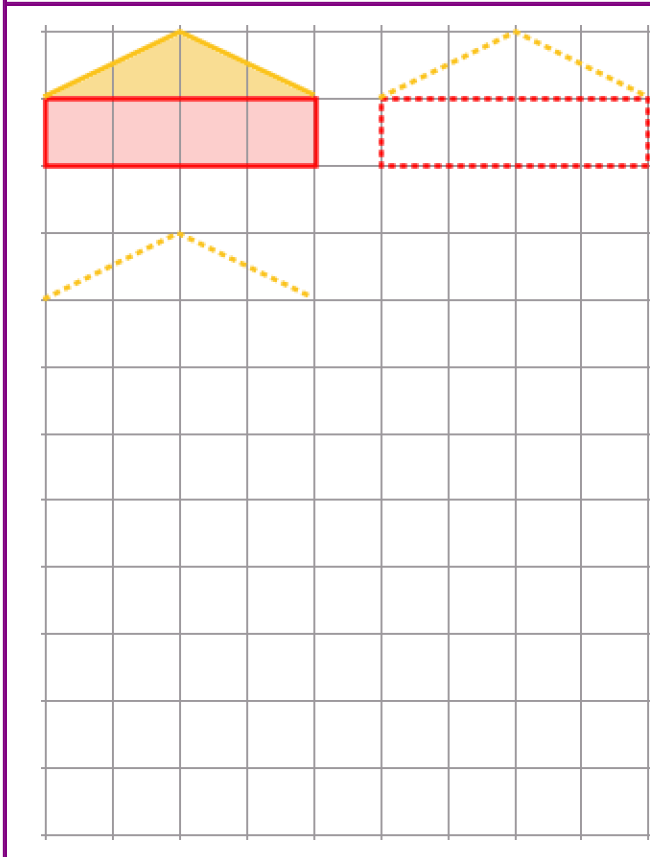
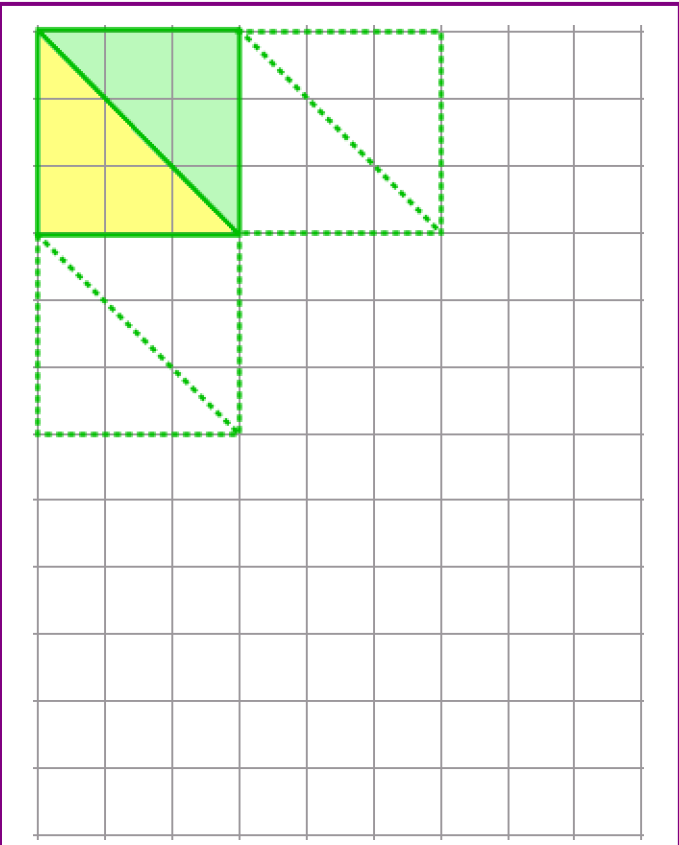
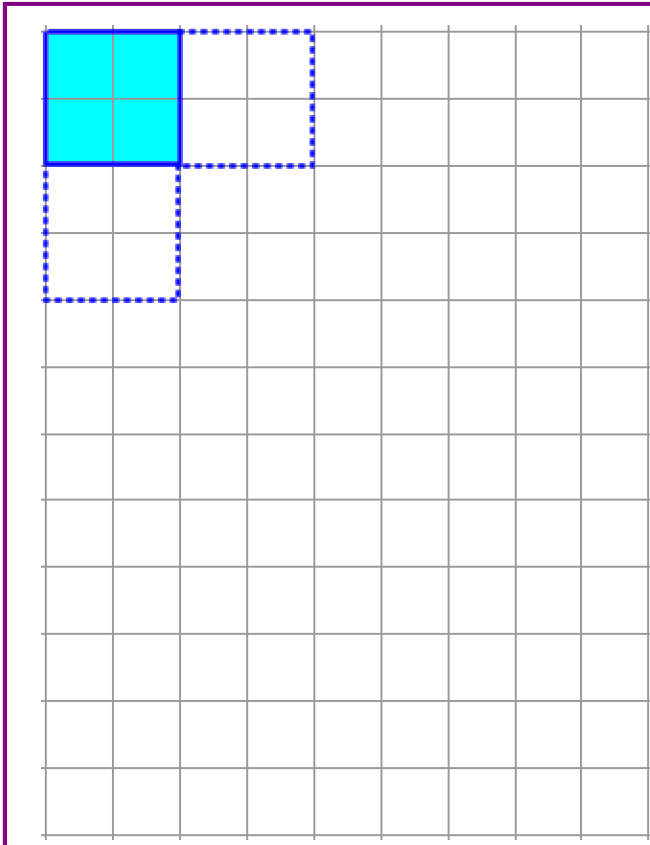
2. Join each dot to a dot on the other side with straight lines (horizontal and vertical lines) so that you get a grid of squares. Use a ruler and draw neatly.



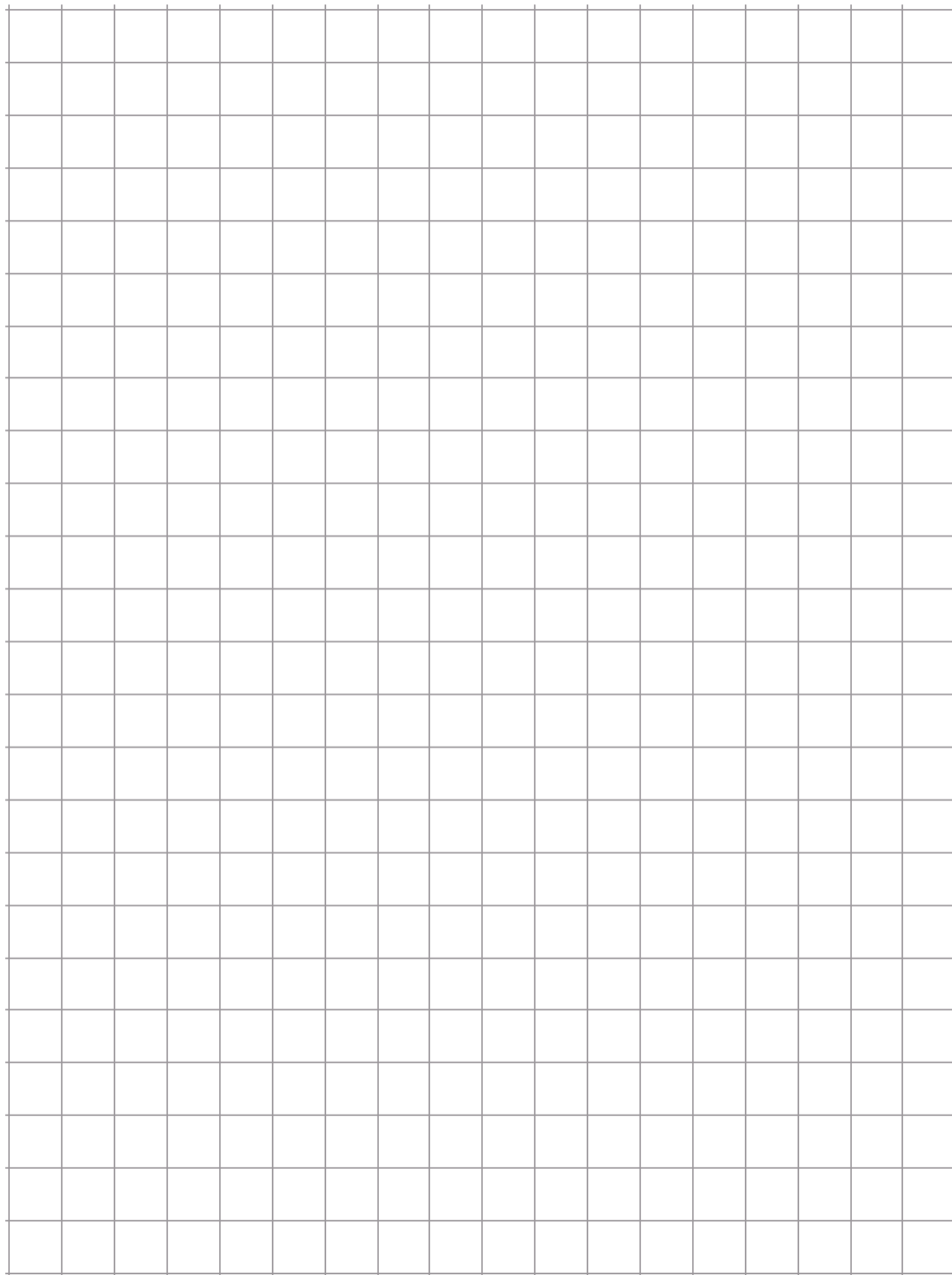
Then color the squares using this pattern (ye = yellow):

blue	green	blue	green
ye	purple	ye	purple
pink	purple	pink	purple

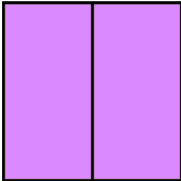
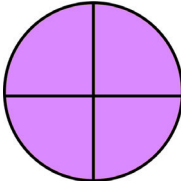
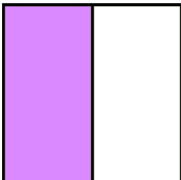
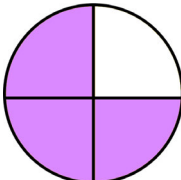
3. Repeat the patterns to fill the grids.



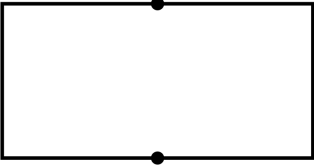
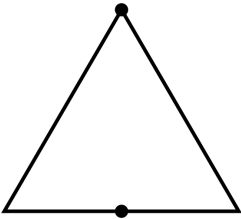
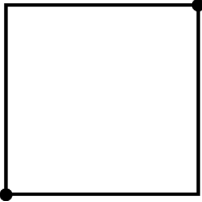
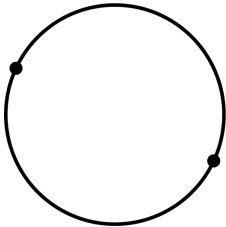
4. Here you can design your own patterns!



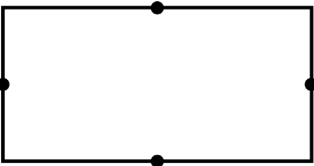
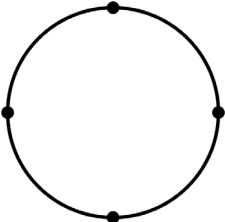
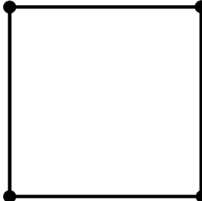
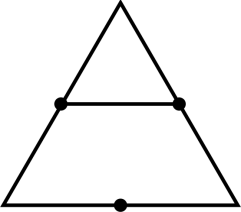
## Halves and Quarters

<p>This square is divided into two parts that are the same. The parts are <b>halves</b>. Each part is <u>one half</u>.</p>		<p>This circle is divided into four parts that are the same. The parts are called <b>fourths</b> or <b>quarters</b>. Each part is <u>one fourth</u> or <u>one quarter</u>.</p>	
<p>Here, one-half of the square is colored. The other half is white.</p>		<p>Here, three-fourths of the circle is colored. One-fourth of it is white.</p>	

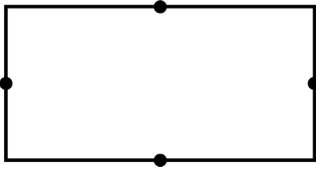
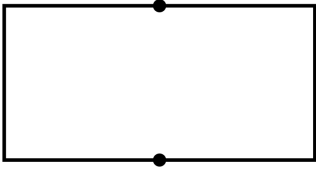
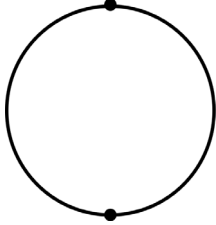
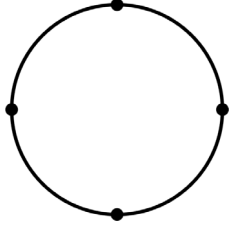
1. Divide these shapes into halves by drawing a straight line from dot to dot. Then color them as the instructions say.

<p>a. </p> <p style="text-align: center;">Color one half.</p>	<p>b. </p> <p style="text-align: center;">Color two halves.</p>	<p>c. </p> <p style="text-align: center;">Color one half.</p>	<p>d. </p> <p style="text-align: center;">Color both halves, but different colors.</p>
--	---	--	--

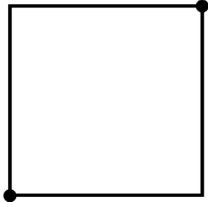
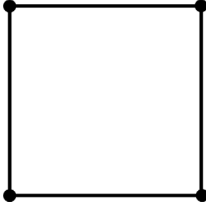
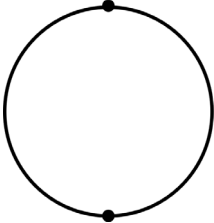
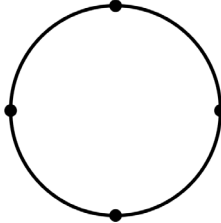
2. Divide these shapes into fourths by drawing two straight lines from dot to dot. Then color them as the instructions say.

<p>a. </p> <p style="text-align: center;">Color 1 fourth.</p>	<p>b. </p> <p style="text-align: center;">Color 3 fourths.</p>	<p>c. </p> <p style="text-align: center;">Color 2 fourths.</p>	<p>d. </p> <p style="text-align: center;">Color 4 fourths = the <b>WHOLE</b> triangle.</p>
--	---	--	---

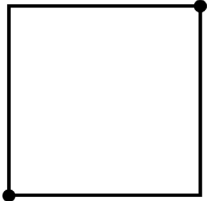
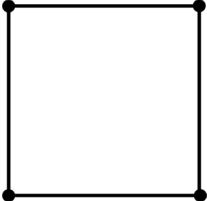
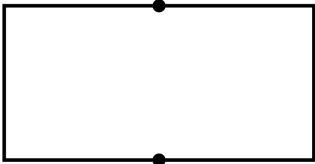
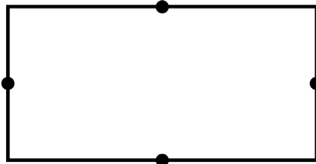
3. Color. Then compare.

			
a. Color one-fourth of the rectangle.	Color one-half of the rectangle.	b. Color one-half of the circle.	Color one-quarter of the circle.

Which one is a bigger piece, one half or one fourth?

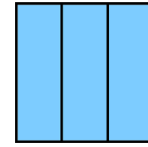
			
c. Color one-half of the square.	Color two quarters of the square.	d. Color one-half of the circle.	Color two quarters of the circle.

Which one is more, one half or two quarters?


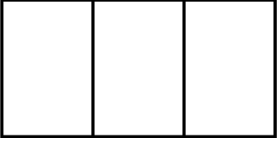


			
e. Color one-half of the square.	Color three-fourths of the square.	f. Color one-half of the rectangle.	Color three-fourths of the rectangle.

Which one is more, one half or three fourths?


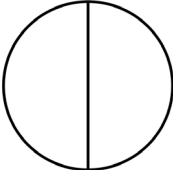
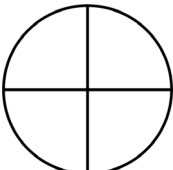

This square is divided into three parts that are the same.  
The parts are *thirds*. Each part is one third.


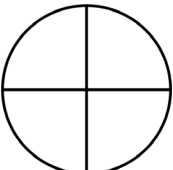
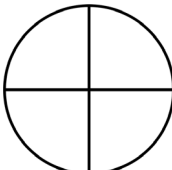
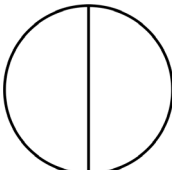


4. Color.

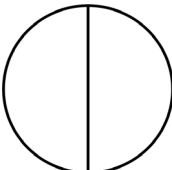

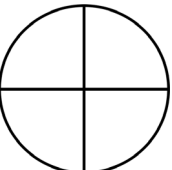
<p>a. </p> <p>Color one third.</p>	<p>b. </p> <p>Color two thirds.</p>	<p>c. </p> <p>Color one third.</p>	<p>d. </p> <p>Color three thirds.</p>
---	--	--	--

5. Color. Then compare.

<p></p> <p>Color two thirds.</p> <p>a. Which is more, two thirds or one half?</p>	<p></p> <p>Color one half.</p>	<p></p> <p>Color three fourths.</p> <p>b. Which is more, three fourths or two thirds?</p>	<p></p> <p>Color two thirds.</p>
--	---	---	---


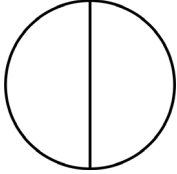
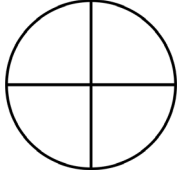
<p></p> <p>c. Which is more, two thirds or two quarters?</p>	<p></p>	<p></p> <p>d. Which is more, two fourths or one half?</p>	<p></p>
---	--	---	--

6. Color ONE piece in each pie. Then compare. Think of eating pie pieces!

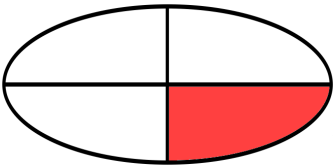
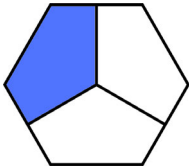
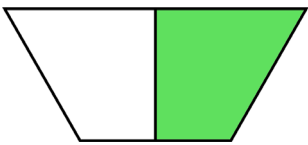
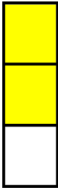
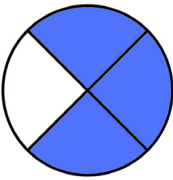

<p>a. Which is more, one half or one third?</p> <p>b. Which is more, one fourth or one third?</p>	<p>  </p>
---	---



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

<p>a. </p> <p>The whole pie is <u>3</u> <i>thirds</i>.</p>	<p>b. </p> <p>The whole pie is _____.</p>	<p>c. </p> <p>The whole pie is _____.</p>
---	--	--

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.

<p>a. </p>	<p><u>1</u> <u>fourth</u> of the <u>oval</u> is colored.</p>
<p>b. _____ of</p>	<p>the <u>hexagon</u> is colored. </p>
<p>c. </p>	<p>_____ of the <u>trapezoid</u> is colored.</p>
<p>d. _____ of</p>	<p>the _____ are colored. </p>
<p>e. </p>	<p>_____ of the _____ are colored.</p>
<p>f. _____ of</p>	<p>the _____ are colored. </p>

# Measuring Length

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

1. Measure how wide or how long 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 tall your chair is;
- how long your friend is when lying on the floor;
- 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 three 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.

3. Ryan measured that his room was 27 shoes wide, using daddy shoes.  
He also measured it using baby shoes.  
Was Ryan's room 81 baby-shoes wide, or 9 baby-shoes wide?

4. Measure how long some small things are, using paperclips.

**You need:** several paperclips that are the same size, small things to measure such as an eraser, a pencil, crayons, toys, or books.



Write the things below **in order**, from shortest to longest.

\_\_\_\_\_ paperclips

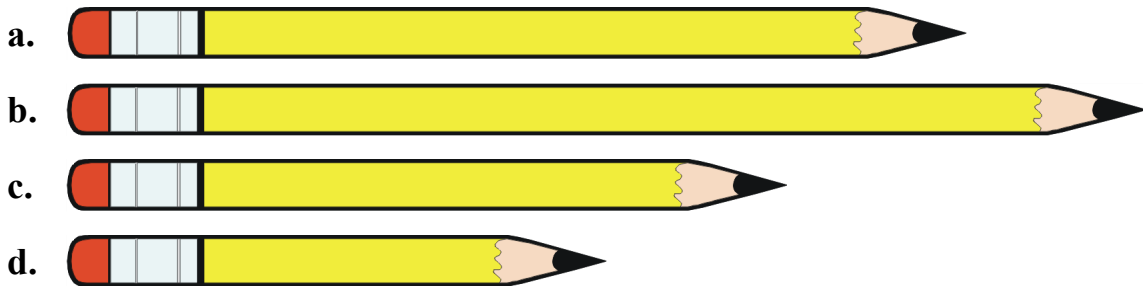
\_\_\_\_\_ paperclips

\_\_\_\_\_ paperclips

\_\_\_\_\_ paperclips

\_\_\_\_\_ paperclips

5. How many crayons long are these pencils? How many paperclips long are they?



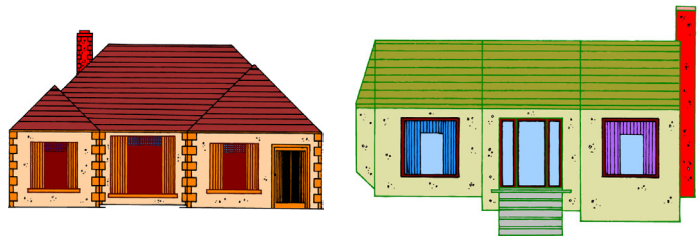
pencil a. \_\_\_\_\_ crayons long; \_\_\_\_\_ paperclips long

pencil b. \_\_\_\_\_ crayons long; \_\_\_\_\_ paperclips long

pencil c. \_\_\_\_\_ crayons long; \_\_\_\_\_ paperclips long

pencil d. \_\_\_\_\_ crayons long; \_\_\_\_\_ paperclips long

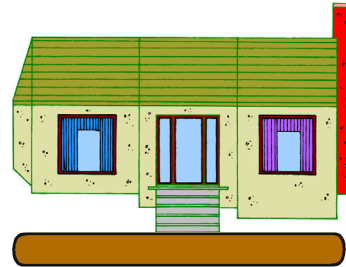
Sometimes we cannot easily tell which of two things is longer or wider. We can use a third thing as a “measuring stick.” Look at these two houses. Can you tell which one is longer?



Now let’s use this “log” as a measuring stick:



House 1 is a little shorter than our log.

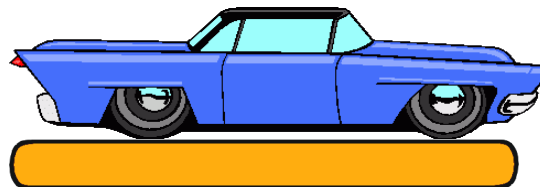
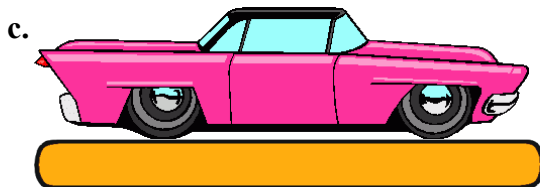
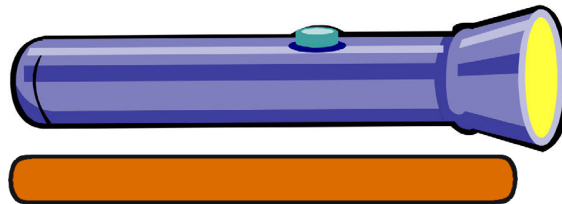
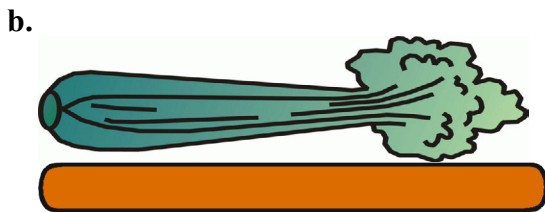


House 2 is a little longer than our log.

Is house 1 longer than house 2? Or the other way around?

House 2 is longer than house 1, because it is longer than our log, whereas house 1 is shorter than the log.

6. Compare the things to the “measuring stick.” Mark the longer of the two.



7. Draw a picture to match the situation. You can draw stick figures.

a. Jerry is shorter than the top of the cabinet. The top of the cabinet is shorter than Mike.

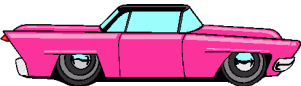
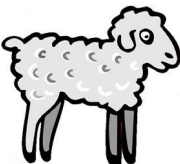




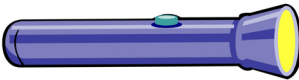


b. The table is taller than little Kyle. Little Mary is taller than the table.

## 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 five 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 repeat 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.

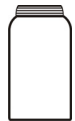
Fill the cup with water and pour into the pot. Repeat until the pot is full.  
Keep count of how many cups full of water you need to fill the pot.



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.



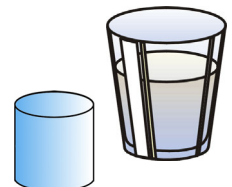
The jar holds \_\_\_\_\_ measuring cups of water.

Now do the same with a large drinking glass.

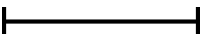
The glass holds \_\_\_\_\_ measuring cups of water.



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 smaller drinking glass. Which is correct: did the bucket hold 19 or 53 smaller drinking glasses?

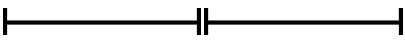


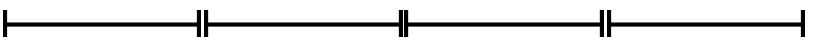
# Measuring Lines in Inches

This line is 1 inch long. 

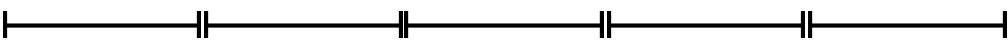
We also write "1 in." for short.

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

a.  \_\_\_\_\_ inches

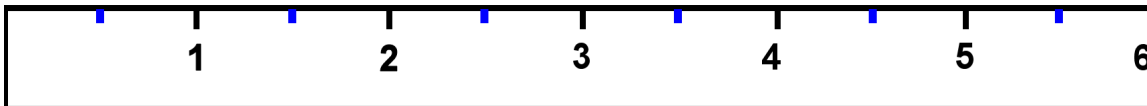
b.  \_\_\_\_\_ inches

c.  \_\_\_\_\_ inches

d.  \_\_\_\_\_ inches

2. How many inches long are these items?

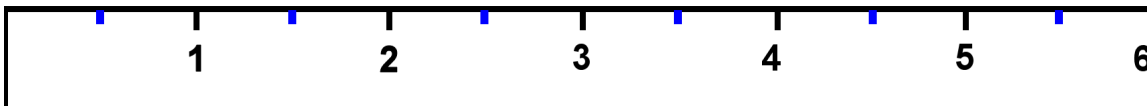
 \_\_\_\_\_ in.

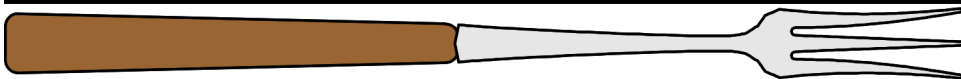


 \_\_\_\_\_ in.

 \_\_\_\_\_ in.

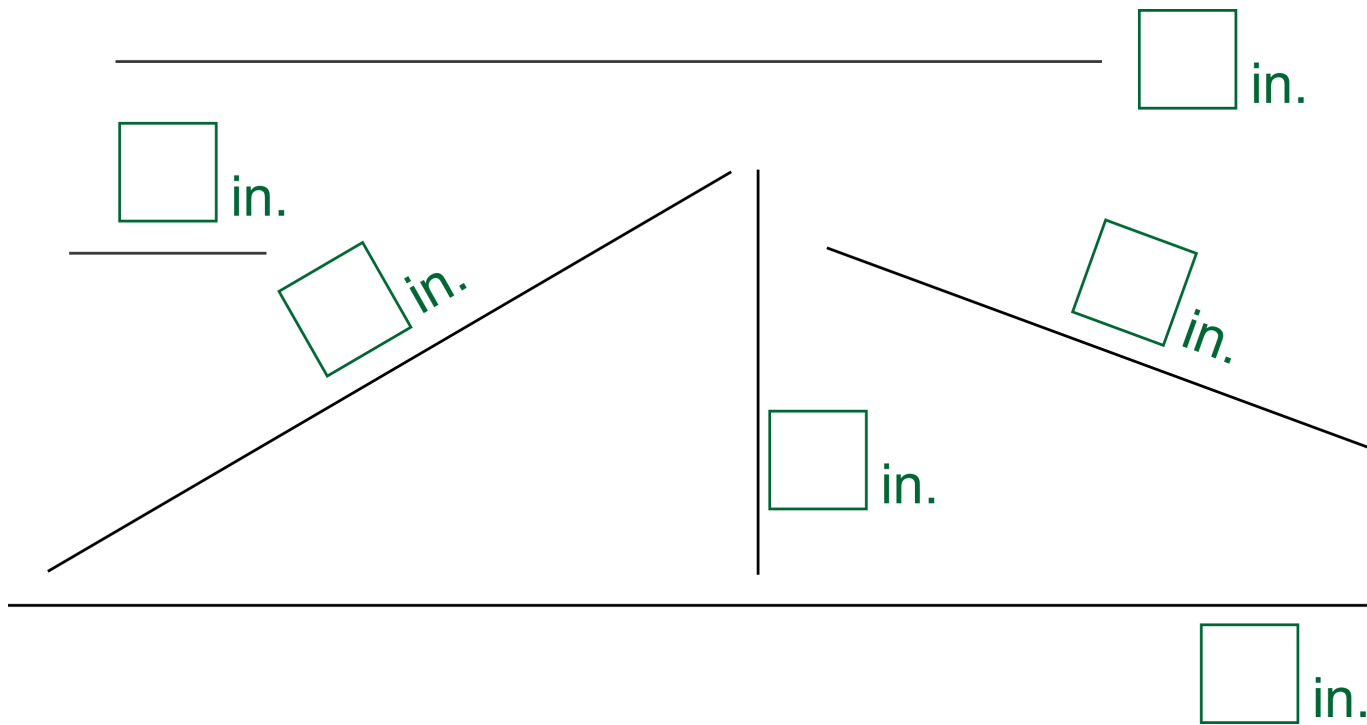
 \_\_\_\_\_ in.



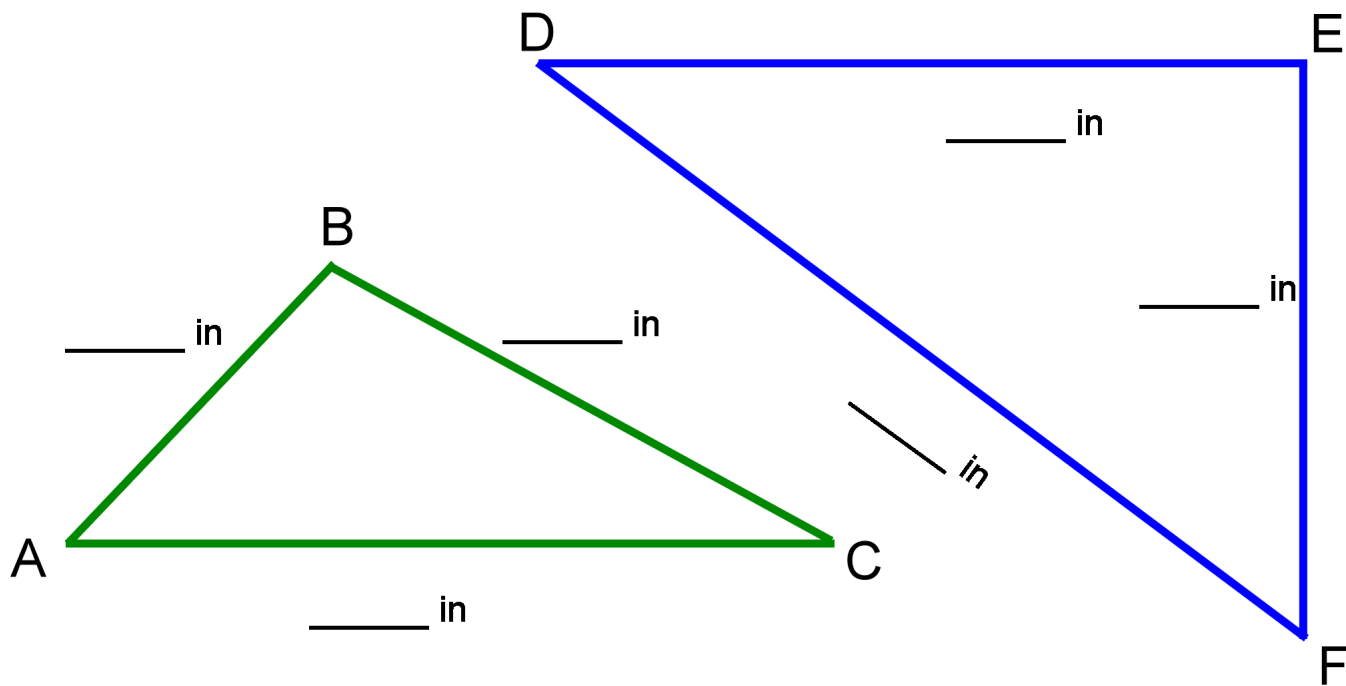
 \_\_\_\_\_ in.



3. How many inches? Measure these lines with your ruler.



4. Measure the sides of the triangles.



5. Use a ruler and draw lines with these lengths:

a. 4 in.

b. 2 in.

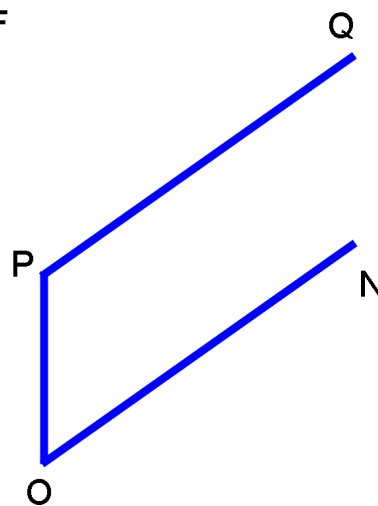
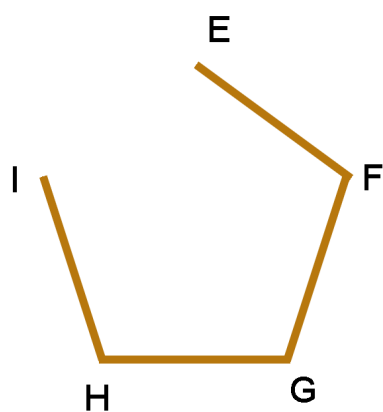
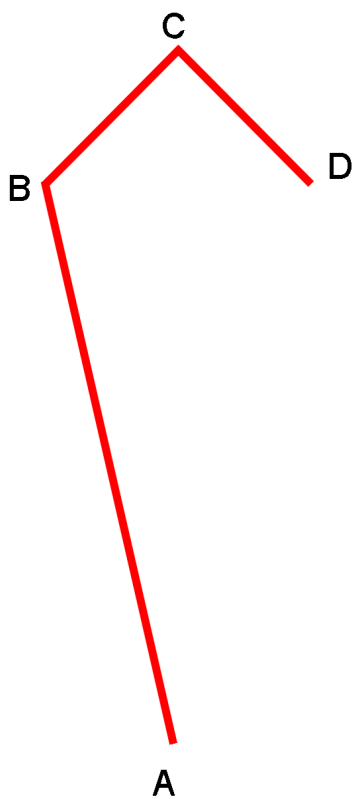
c. 5 in.

d. 7 in.

e. 1 in.


f. 8 in.

6. Draw the last side for these figures with a ruler. Then measure all the sides of each figure. Write the measurement next to each side (for example “2 inches” or “2 in.”).



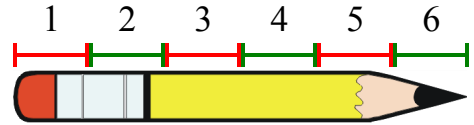
# Measuring Lines in Centimeters

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



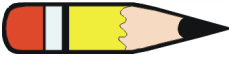



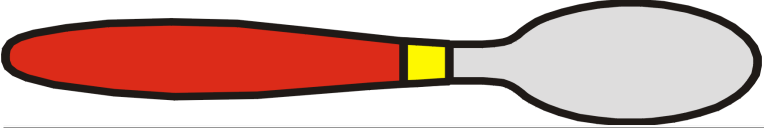
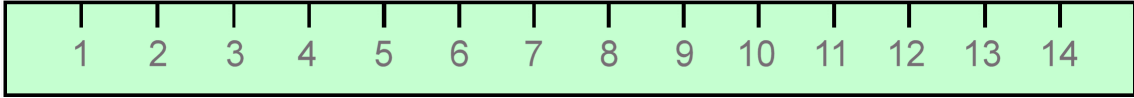

This line is 1 centimeter long: 

A centimeter is written in its short form as “cm.”

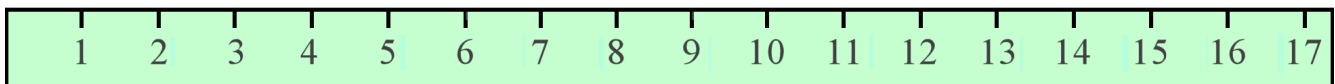
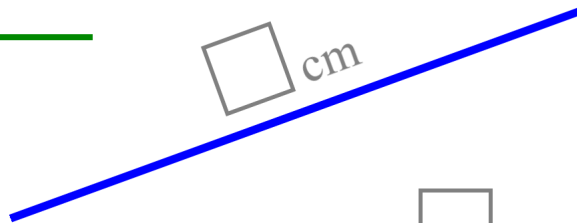
This pencil is 6 cm long.



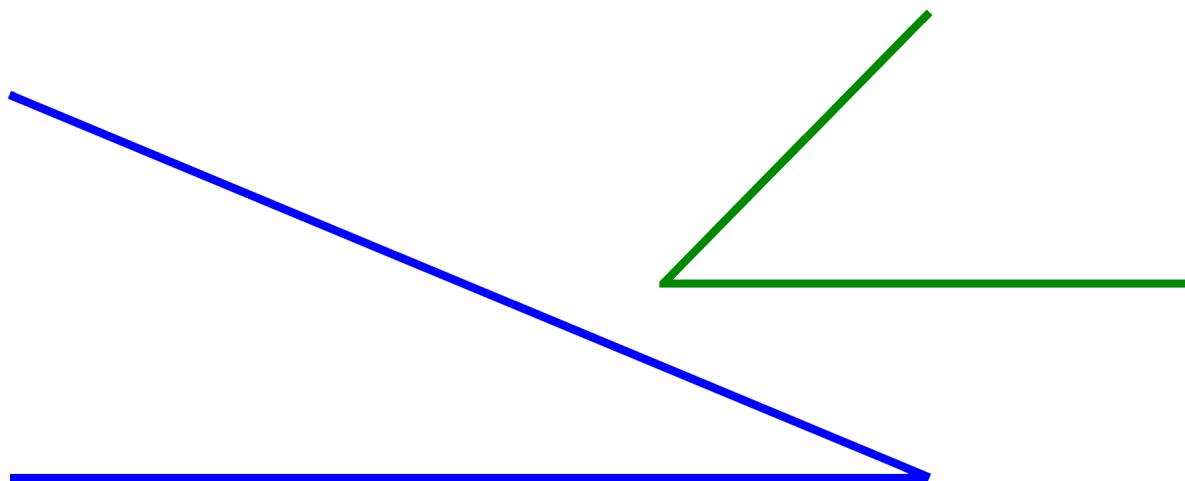
1. How many centimeters long are these things?

<p>a.   _____ cm</p>	<p>b.   _____ cm</p>
<p>c.   _____ cm</p>	
<p>d.  _____ cm</p> 	
<p>e.  _____ cm</p>	

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



3. Draw the last side for these figures with a ruler. Then measure all three sides of each figure. Write the measurement next to each line (for example “6 cm”).



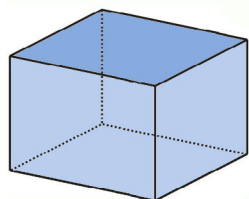
4. Use your own ruler and draw lines that are these lengths.

- a. 4 cm
- b. 5 cm
- c. 8 cm
- d. 16 cm

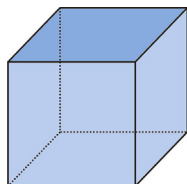
5. Measure some things around you! For example, a book, your pencil, a table, and so on.

Thing	How long?

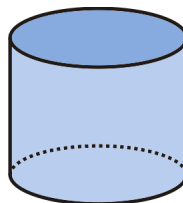
## Three-Dimensional Shapes



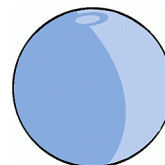
This is a **box**. It is also called a “rectangular prism.”



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.



box *or* cube



box *or* cube



box *or* cube



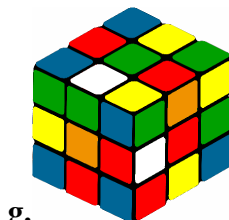
box *or* cube



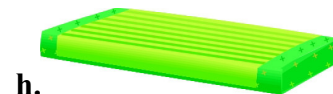
box *or* cube



box *or* cube



box *or* cube



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.

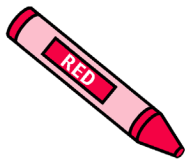
I found \_\_\_\_\_ and \_\_\_\_\_.

4. Are these things in the shape of a *cylinder* or a *ball*? Underline the right choice.



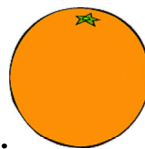
a.

cylinder *or* ball



b.

cylinder *or* ball



c.

cylinder *or* ball



d.

cylinder *or* ball



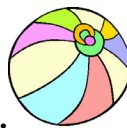
e.

cylinder *or* ball



f.

cylinder *or* ball



g.

cylinder *or* ball



h.

cylinder *or* ball

5. Which shapes can roll on the floor? Underline. *cylinder box ball cube*

6. Which shapes will slide on the floor and not roll? *cylinder box ball cube*

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

I found \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, and \_\_\_\_\_.

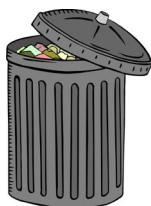
8. Find four things in your classroom or at home in the shape of a *cylinder*.  
Put them in order from the smallest to the biggest.

I found \_\_\_\_\_, \_\_\_\_\_,  
\_\_\_\_\_, and \_\_\_\_\_.

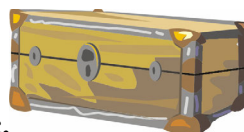
9. Name the basic shape.



a.



b.



c.



d.

(This page intentionally left blank.)

---

# Chapter 7: Adding and Subtracting Within 0-100

## Introduction

This 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 carrying (for example,  $23 + 4$  or  $56 + 3$ ).
- Subtracting a one-digit number from a two-digit number without borrowing: For example,  $45 - 3$  or  $67 - 6$ .
- Adding or subtracting two-digit numbers in columns (one number under the other) without regrouping (carrying or borrowing)
- Recognizing that sometimes in adding two-digit numbers we need to carry — to combine ten ones to make a new ten. We approach this concept using concrete visual models and don't treat it as an abstract concept.
- Practicing specific strategies for adding or 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. Actually memorizing these basic addition and subtraction facts is left for second grade.

### The Lessons in Chapter 7

	page	span
Refresh Your Memory .....	90	2 pages
Adding Without Carrying .....	92	3 pages
Subtracting Without Borrowing .....	95	3 pages
Adding or Subtracting Two-Digit Numbers .....	98	4 pages
Completing the Next Ten .....	102	3 pages
Going Over Ten .....	105	4 pages
Subtracting from Whole Tens .....	109	2 pages
Add Using “Just One More” .....	111	2 pages
A “Trick” with Nine and Eight .....	113	3 pages
Adding within 20 .....	116	4 pages
Subtract to 10 .....	120	2 pages
Using Addition to Subtract .....	122	3 pages
Some Mixed Review .....	125	3 pages
Pictographs .....	128	2 pages
Review .....	130	4 pages



## 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](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](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](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.abcy.com/clear\\_it\\_addition.htm](http://www.abcy.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](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](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.abcy.com/first\\_grade\\_word\\_problems\\_add\\_subtract.htm](http://www.abcy.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.abcy.com/math\\_stack.htm](http://www.abcy.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>

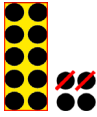
### **Pictograph Quiz**

Use the pictograph to answer questions about some children and their books.

[http://www.softschools.com/math/data\\_analysis/pictograph/games/](http://www.softschools.com/math/data_analysis/pictograph/games/)

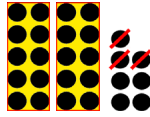
(This page intentionally left blank.)

## Subtracting Without Borrowing



$$14 - 2 = \underline{12}$$

“I can subtract  $4 - 2 = 2$ ;  
the 10 stays the same.”



$$27 - 3 = \underline{24}$$

“I can subtract  $7 - 3 = 4$ ;  
the 20 stays the same.”

Think of the *ones digits* only.  
The tens do not change  
because we don't have to  
subtract from the tens.

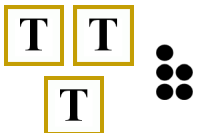
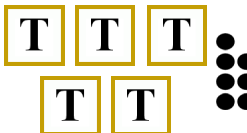
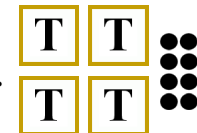
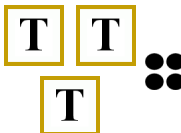
1. Subtract and compare. The top problem helps you solve the bottom one!

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

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

<p>a. <math>54 - 2 = \underline{\quad}</math></p> <p><math>4 - 2 = \underline{\quad}</math></p>	<p>b. <math>76 - 2 = \underline{\quad}</math></p> <p><math>\underline{\quad} - \underline{\quad} = \underline{\quad}</math></p>	<p>c. <math>88 - 4 = \underline{\quad}</math></p> <p><math>\underline{\quad} - \underline{\quad} = \underline{\quad}</math></p>
---	---	---

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

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

4. Subtract.

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

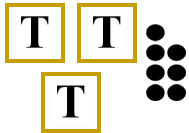
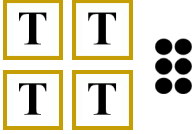

5. Find the missing addends.

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

6. Solve.

<b>a.</b> 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>b.</b> She had 30 pictures to sell when she started. How many does she have left now?
<b>c.</b> 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.

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

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

(This page intentionally left blank.)

---

# 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

	page	span
Counting Dimes, Nickels, and Cents .....	136	3 pages
Counting Dimes, Nickels, and Cents 2 .....	139	2 pages
Quarters .....	141	3 pages
Practicing with Money .....	144	2 pages
Review - Coins .....	146	1 page

### 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/](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](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](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](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>


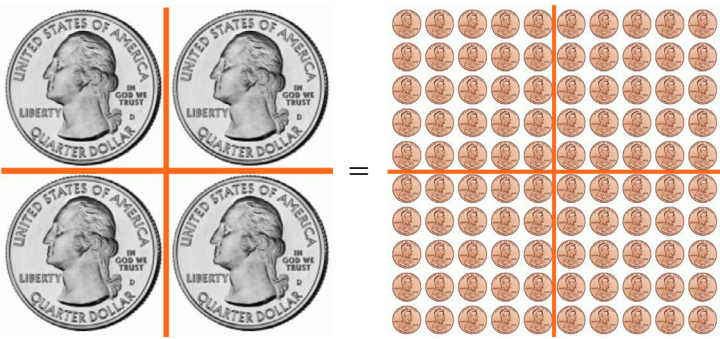



### **Coins and Medals from U.S. Mint**

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](http://www.usmint.gov/kids/coinsMedals)

(This page intentionally left blank.)

# Quarters

 <p>One <b>quarter</b> is 25 cents.</p> <p>The word “quarter” means one-fourth. A quarter coin is one-fourth part of a <b>dollar</b>.</p> <p>One dollar is 100 cents, and is written \$1.</p>	 <p>4 quarters = 100¢ 1 dollar = 1 dollar = \$1</p>
 <p>Two quarters = 50¢.</p>	 <p>Three quarters = 75¢</p>
 <p>25¢      35, 45, 55      56, 57¢</p> <p>(count dimes by tens)</p> <p>Count the quarters first since they have the biggest cent-value.</p>	













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:

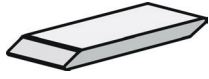













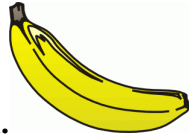



a. two dimes and a quarter

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>