

— THIRD GRADE —
MATH WITH
CONFIDENCE



INSTRUCTOR GUIDE

FOR USE WITH STUDENT WORKBOOKS PART A AND PART B

— KATE SNOW —

Third Grade
Math
with Confidence

Instructor Guide

KATE SNOW

WELL-TRAINED MIND PRESS

Copyright Information: The illustrations and all other content in this book are copyrighted material owned by Well-Trained Mind Press. Please do not reproduce any part on email lists or websites. When you buy a physical (paper or CD) or digital (PDF, e-book, or MP3) product published by Well-Trained Mind Press, you acquire the right to reproduce the product as needed for use within your own household. You may not reproduce it for resale or donation to others. Making copies, either for resale or donation, is a violation of United States law. According to the United States Copyright Office, “Copyright infringement occurs when a copyrighted work is reproduced, distributed, performed, publicly displayed, or made into a derivative work without the permission of the copyright owner.” For further information, see <http://www.copyright.gov/help/faq/faq-definitions.html>.

Well-Trained Mind Press also sells products from other publishers, whose copyright policies may differ from ours. Check with the other publishers to learn their copyright policies.

Schools and co-ops MAY NOT PHOTOCOPY any portion of this book, with the exception of the blackline masters in the back of the book.

To purchase a license to reproduce student materials for classroom, online, or other group instruction, send email to support@welltrainedmind.com or call us at 1-877-322-3445.

Names: Snow, Kate (Teacher), author.

Title: Third grade math with confidence. Instructor guide / Kate Snow.

Other titles: Instructor guide

Description: [Charles City, Virginia] : Well-Trained Mind Press, [2023] | Series: Math with confidence | For instructors of third grade math students.

Identifiers: ISBN: 978-1-944481-28-5 (paperback)

Subjects: LCSH: Mathematics--Study and teaching (Elementary) | LCGFT: Teachers' guides. | BISAC: JUVENILE NONFICTION / MATHEMATICS / Arithmetic.

Classification: LCC: QA107.2 .S663 2023 | DDC: 372.7--dc23

1 2 3 4 5 6 7 8 9 10 B&B 31 30 29 28 27 26 25 24 23

No part of this work may be reproduced or transmitted in any form or by any means, electronic or mechanical, including photocopying and recording, or by any information storage or retrieval system without prior written permission of the copyright owner unless such copying is expressly permitted by federal copyright law, or unless it complies with the Photocopying and Distribution Policy above.

Address requests for permissions to make copies to: support@welltrainedmind.com

© 2023 Well-Trained Mind Press

All rights reserved.

Table of Contents

Welcome to <i>Third Grade Math with Confidence!</i>	1
Introduction	2
Unit 1: Review Addition and Subtraction	11
Unit 2: Multiplication, Part 1	51
Unit 3: Mental Math and Word Problems	81
Unit 4: Multiplication, Part 2	113
Unit 5: Numbers to 1,000	137
Unit 6: Fractions	171
Unit 7: Money	213
Unit 8: Multiplication, Part 3	243
Unit 9: Length, Perimeter, and Area	273
Unit 10: Division, Part 1	315
Unit 11: Numbers to 10,000	345
Unit 12: Division, Part 2	373
Unit 13: Geometry	405
Unit 14: Elapsed Time	431
Unit 15: Division, Part 3	467
Unit 16: Weight and Capacity	487
Helpful Resources	523
Complete Picture Book List	523
Scope and Sequence	524
Complete Memory Work List.....	527
Materials List	529
Blackline Masters	531

Welcome to Third Grade Math with Confidence!

Third Grade Math with Confidence is a complete math curriculum that will give your child a solid foundation in math. It's **playful, hands-on, and fun** with thorough coverage of third-grade math skills:

- multiplication and division facts to 100
- adding and subtracting four-digit numbers
- multi-step word problems
- perimeter and area of rectangles
- adding and subtracting fractions
- geometry, money, elapsed time, and measurement

The incremental, confidence-building lessons will help your child develop a strong understanding of math, step by step. Daily review ensures she will fully master what she has learned in previous lessons. With this blend of **deep conceptual understanding and traditional skill practice**, you'll give your child a thorough third-grade math education.

Fun activities like Fraction Diner, the Chocolate Shop, Escape the Maze, and Division Crash will help your child develop a **positive attitude** toward math. You'll also find optional enrichment lessons at the end of each unit, with suggestions for delightful math picture books and real-world math activities that help your child appreciate the importance of math in real life.

Besides this Instructor Guide, *Third Grade Math with Confidence* also includes **two colorful, engaging Student Workbooks**. You'll find three workbook pages for each lesson. First, you'll use the Lesson Activities page to teach your child a new topic. Then, your child will complete the Practice and Review pages to practice the new concept and review previously-learned skills. Workbook Part A covers Units 1-8, and Workbook Part B covers Units 9-16.

Many parents worry about their ability to teach math as their children move beyond the primary years. If that's the case for you, don't worry: I promise to guide you every step of the way! *Third Grade Math with Confidence* is full of features that will help you teach math with confidence all year long:

- **Scripted, open-and-go lessons** help you clearly explain and teach new math concepts
- **Explanatory notes** help you understand more deeply how children learn math so you feel well-equipped to teach your child
- **Unit Wrap-ups and Checkpoints** at the end of each unit provide assessment and give you guidance on whether your child is ready to move on to the next unit

In the next section, you'll learn how the curriculum is organized and how to get your materials ready. Invest a little time reading this section now (and getting your Math Kit ready), and you'll be ready to teach math like a pro all year long.

Wishing you a joyful year of third grade math!
Kate Snow

Introduction

The Goals of *Third Grade Math with Confidence*

Third Grade Math with Confidence aims to help children become confident and capable math students, with a deep understanding of math concepts, proficiency and fluency with fundamental skills, and a positive attitude toward math.

Deep conceptual understanding

You'll focus on one main topic per unit so your child can build deep conceptual knowledge of the new material. (Educators call this a *mastery approach* to new content.) Each new lesson builds on the previous one so your child gradually develops thorough understanding.

Proficiency with fundamental skills

Children need lots of practice to master the basic skills necessary for proficiency in math. *Third Grade Math with Confidence* provides continual, ongoing review of these core skills so your child fully grasps them by the end of the year. (Educators call this a *spiral approach* to review, because children periodically revisit topics, just as the curve of a spiral returns to the same point on a circle.)

Positive attitude

The lessons in *Third Grade Math with Confidence* include games, pretend activities, and lots of hands-on learning so your child enjoys and even looks forward to math time. Optional enrichment lessons at the end of each unit (with a picture book suggestion and math extension activity) provide a break from the usual routine and help your child appreciate how math is used in real life.

What's New in Third Grade

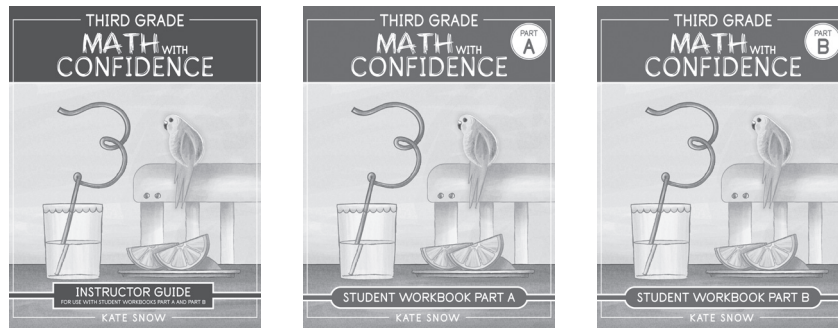
If you used earlier levels of *Math with Confidence*, you'll find two major changes in *Third Grade Math with Confidence*. First, the lessons are still grouped into units, but they are no longer grouped into weeks. This change gives you more flexibility with your schedule and allows the number of lessons in each unit to vary depending on what skills need to be covered. You'll now find an enrichment lesson (with math application activities and a picture book suggestion) at the end of each unit rather than each week. As in earlier levels, these lessons are optional.

Second, every regular lesson now includes a **Lesson Activities page in the workbook** (in addition to Practice and Review). These pages provide visual aids, practice exercises, and game boards all in one place to streamline your teaching. The Lesson Activities pages are designed for you to complete with your child during your hands-on teaching time. They are **not** meant for your child to complete independently.

Overview

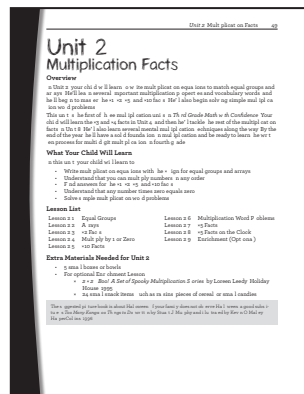
You'll need three books to teach *Third Grade Math with Confidence*. All three books are essential for the program.

- This Instructor Guide contains the scripted lesson plans for the entire year (Units 1-16).
- Workbook Part A contains the workbook pages for the first half of the year (Units 1-8).
- Workbook Part B contains the workbook pages for the second half of the year (Units 9-16).



Units

Third Grade Math with Confidence is organized into 16 units. Each unit focuses on developing thorough understanding of one main concept, such as multiplication, area and perimeter, or fractions. Units vary in length from 6 to 12 lessons, and there are a total of 144 lessons. The final lesson in each unit is an optional enrichment lesson.



The preview for each unit includes the following:

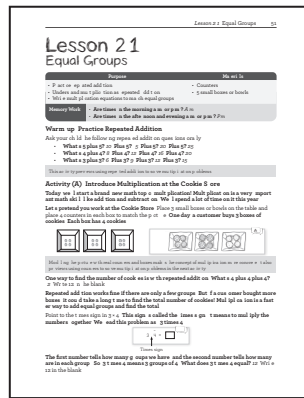
- **Overview.** A brief summary of what you'll teach your child.
- **What Your Child Will Learn.** A detailed list of objectives for the unit.
- **Lesson List.** The full list of lessons included in the unit.
- **Extra Materials.** This section gives you a heads-up if you need any extra materials for the unit. You'll sometimes need to supplement your regular math materials with a few everyday household items, such as markers, tape, or scissors. The optional enrichment lessons also usually require some extra materials.
- **Teaching Math with Confidence.** These notes help you understand more deeply how children learn math so that you're well-prepared to teach the new concepts.

Lessons

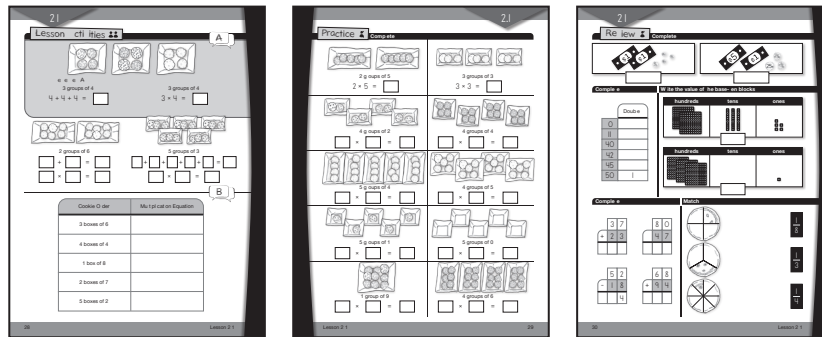
Each lesson includes several short and varied activities to keep your child engaged and attentive. You'll need both the Instructor Guide and Student Workbook for every lesson. Most pilot families spent an average of 25-35 minutes on each lesson, with 10-15 minutes of parent-led instruction and 15-20 minutes of independent work. However, this will vary depending on your teaching style and your child's learning style—and whether you have any toddlers interrupting you!

The Instructor Guide contains the scripted, open-and-go lesson plans. Within the Instructor Guide:

- **Bold text** indicates what you are to say.
- *Italic text* provides sample answers.
- Gray-highlighted text indicates explanatory notes.

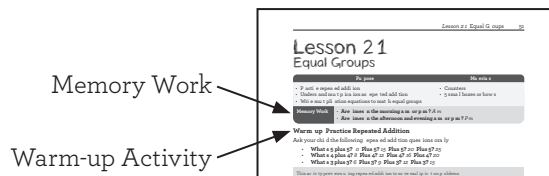


The Student Workbook includes three workbook pages for each lesson. First, you'll use the Lesson Activities page to teach your child the new concept or skill. Then, your child will complete the Practice and Review pages to reinforce what he learned in the lesson and review previously-learned skills. (Some Review pages will have the Lesson Activity page for the next Lesson on their reverse side. Hold on to those pages for use in the next lesson.)



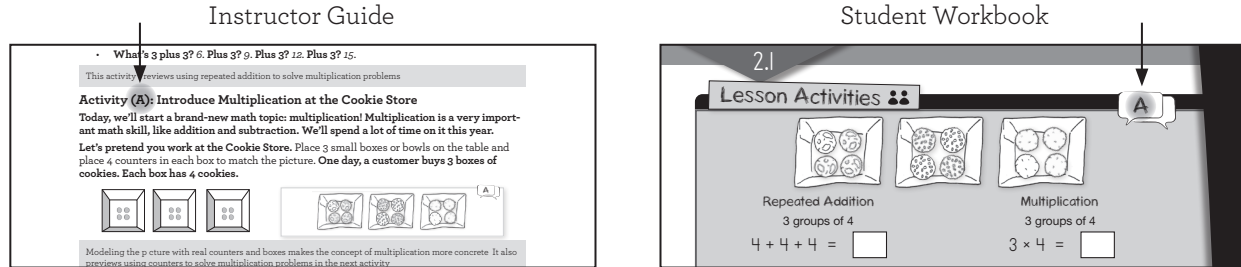
Memory work and warm-up activity with parent

Each lesson begins with a few memory work review questions and a quick warm-up activity. The memory work questions are listed at the top of each lesson. Reviewing a few questions daily helps your child master these important facts and vocabulary words. The warm-up activity eases your child into math time and helps start the lesson on a confident and positive note.



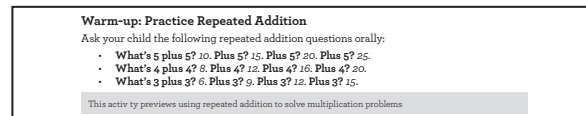
Lesson activities with parent

Next, you'll use the scripted lesson plan and Lesson Activities page to teach your child new concepts and skills. The Instructor Guide and Lesson Activities workbook pages are lettered so that it's easy to see how they align. Some activities are only in the Instructor Guide, without a matching section on the Lesson Activities page.



The activity headings and images in the Instructor Guide are lettered to help you find the matching activity in the Student Workbook.

Instructor Guide



Some activities in the Instructor Guide do not have a letter. These activities do not have a matching section in the Student Workbook, and they are completed either orally or with hands-on materials instead.

Independent practice

Last, your child will complete the Practice and Review workbook pages. Most third-graders will be able to complete these workbook pages independently, but some may need help reading and interpreting the directions.

Try to check the workbook pages as soon as your child finishes them. This immediate feedback shows your child that you value his work, and it helps prevent mistakes from becoming ingrained habits. You'll find answer keys for the Practice and Review pages at the end of each unit.

Enrichment Lessons (Optional)

Optional enrichment lessons are scheduled at the end of each unit. The Instructor Guide provides suggestions for a related picture book and enrichment activity, while the Student Workbook includes a two-page Unit Wrap-up for your child to complete.

Many parents and children find that the enrichment lessons are their favorite part of the program. (Siblings often enjoy participating in them, too!) However, these lessons are completely optional. You are free to choose the ones that sound the most fun for your family, or skip them entirely if your schedule is too full.

Picture book

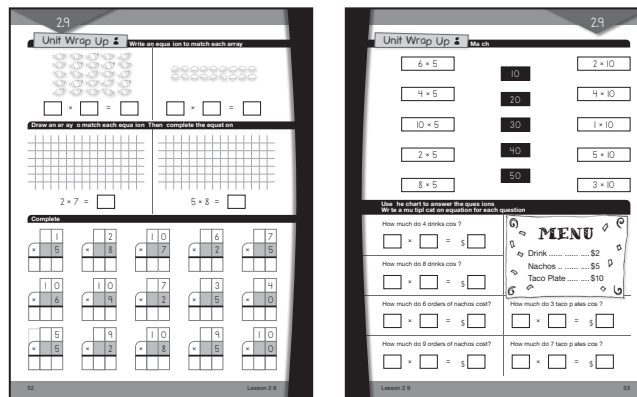
Most of the suggested books relate to the math studied in the unit, but some expose your child to other interesting math topics. **The picture books are not required.** You do not need to buy every book or track down every book in your library system. You can also use a book on a similar topic as a substitute.

Enrichment activity

The enrichment activities help your child understand and appreciate how math is used in everyday life. You'll find suggestions for art projects, real-life applications, and more to make math come alive for your child.

Unit Wrap-up (review and assessment)

The Unit Wrap-ups provide two pages of additional exercises for the concepts and skills your child learned in the unit. You can use them to casually review the unit, or you can use them as tests to assess your child's progress more formally. Either way, children and parents often find it very satisfying to see this concrete evidence of growth. If you live in a state where you're required to provide evidence of learning, you may want to save them for your child's portfolio.



Your child is not expected to fully master every skill from every unit before moving on to the next unit. See below for more on pacing and assessing your child's progress.

Pacing and Checkpoints

Just as children learn to crawl, walk, and talk at different times, they are developmentally ready to learn math at different times, too. *Third Grade Math with Confidence* provides lots of flexibility so your child can learn at her own pace. You know your child best, and you are always welcome to slow down or speed up the pace of the lessons based on your child's needs.

Is My Child Ready to Start *Third Grade Math with Confidence*?

Your child is ready to begin this program if he can:

- Count by 1s, 2s, 5s, and 10s to 1,000.
- Read, write, and compare 3-digit numbers.
- Understand place-value in 3-digit numbers.
- Know the addition and subtraction facts mostly by heart. (He should be able to recall the answers to most within 3 seconds or so.)
- Know how to use place-value strategies to solve mental math problems like $55 + 37$, $36 + 8$, $90 - 42$, or $74 - 6$.
- Know how to add and subtract two- and three-digit numbers with the standard written process. (You might know this method as “stack math” or “borrowing and carrying.”)

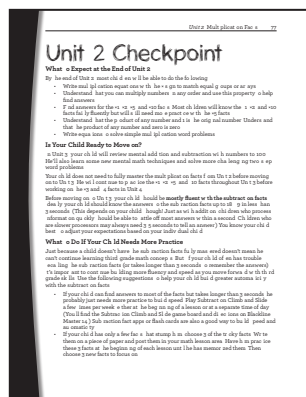
All of these skills are reviewed in the first few units, so don't worry if your child needs a refresher on a few of them. However, if your child is shaky on many of these skills, *Second Grade Math with Confidence* may be a better fit for her. Math skills build incrementally, and it will be difficult for your child to develop proficiency and confidence with the new third-grade skills if she has a weak foundation.

If your child is not fluent with the addition and subtraction facts but knows the rest of the skills listed above, she is probably ready to begin *Third Grade Math with Confidence*. Make sure to add 5 minutes of daily addition and subtraction facts practice to each lesson until your child becomes more fluent with the facts. *Addition Facts that Stick* and *Subtraction Facts That Stick* (also available from Well-Trained Mind Press) provide quick games to help your child master these essential skills.

How Do I Know Whether to Stick with a Lesson (or Unit) or Move On?

Most children need lots of exposure to a new concept or skill before they fully grasp it. Each lesson in *Third Grade Math with Confidence* gently builds on the previous one, but your child doesn't need to completely master every lesson before moving on to the next. The program includes many opportunities for practice and review before your child is expected to achieve full proficiency with a topic.

In general, continue teaching new lessons until you reach the end of a unit. At the end of each unit, you'll find a Checkpoint that provides guidance on whether your child is ready to move on to the next unit.



Each Checkpoint is divided into three parts:

- **What to Expect at the End of the Unit** This list of skills tells you what third graders typically are able to do at the end of each unit.
- **Is Your Child Ready to Move On?** This section tells you what your child needs to have mastered before moving on to the next unit.
- **What to Do if Your Child Needs More Practice** If your child isn't quite ready to move on, this section gives you options for reviewing and practicing the skills your child needs to master before the next unit. (This section is omitted if no specific skills are necessary for the next unit.)

For most units, your child is not expected to fully master all of the material from the current unit before moving on. For example, in Unit 2, your child will learn the $\times 2$, $\times 5$, and $\times 10$ multiplication facts. He'll continue to practice multiplication as he studies mental addition and subtraction in Unit 3, but he does not need to be completely fluent with these multiplication facts before starting the new unit.

Scheduling

Third Grade Math with Confidence includes 144 lessons. 128 are regular lessons, and 16 are optional enrichment lessons. You're welcome to adjust the number of lessons you teach per week to best fit your family's schedule. Some families prefer to teach math 5 days per week, while others prefer to teach math 4 days per week and leave one day open for co-ops, errands, or field trips.

Use the following guidelines to plan your year:

- If you teach 4 lessons per week and teach all the enrichment lessons, *Third Grade Math with Confidence* will take you 36 weeks.
- If you teach 4 lessons per week and skip the enrichment lessons, *Third Grade Math with Confidence* will take you 32 weeks.
- If you teach 5 lessons per week and teach all the enrichment lessons, *Third Grade Math with Confidence* will take you 29 weeks.
- If you teach 5 lessons per week and skip the enrichment lessons, *Third Grade Math with Confidence* will take you 26 weeks.

Use this list as a rough guide to planning your year, but don't set it in stone. You'll generally be able to cover one lesson per day, but you may occasionally find that you want to split a lesson over two days.

How Can I Adjust the Lessons to Best Fit My Child and My Schedule?

Children vary tremendously in how quickly they learn new math concepts and skills. Use these suggestions to adjust the lessons to best fit your child's needs and your family's schedule.

- If your student is a fast processor or picks up math skills quickly, you may be able to **condense lessons** and teach more than one lesson in one day. If so, teach the concepts that are new to your child. Then, have your child complete a selection of exercises on the corresponding Practice and Review pages.
- If your child has a slower processing speed or takes a while to grasp math concepts and skills, some lessons may take longer than you would like (or longer than your child is able to stay engaged and attentive). If that's the case, **set a timer** for your desired lesson length, stop when the timer goes off, and continue the next day where you left off. In the elementary years, you are setting a foundation for a lifetime of proficiency and confidence in math. It's okay not to rush through these essential skills.
- If your child doesn't have the stamina to complete the Practice and Review pages at the same time, **split the lesson into two parts**. Do the Lesson Activities page and Practice page during one part of the day, and then have your child complete the Review page at a different time of the day.
- **Adjust your use of manipulatives** (like base-ten blocks, play money, or fraction circles) to fit your child's learning style. If your child readily understands a skill and doesn't enjoy using manipulatives, allow her to solve the problems without them. If your child learns best with a lot of visual and hands-on reinforcement, allow her to use manipulatives to model problems as much as she needs. Cut out some of the practice problems if the extra manipulative work makes the exercises take too long.
- Games provide a fun way to practice math skills, and they can be a great way to bond with your child. However, if your child doesn't enjoy games, or you don't have time for a game on a particular day, **choose a few problems from the game** for your child to solve instead. That way, he'll still get the extra practice that the game was meant to provide.
- Don't worry if you have a bad day every once in a while. Extra tiredness, oncoming illness, or just plain grumpiness can make for a less-than-cheerful math lesson. It's perfectly normal for children to occasionally get frustrated, and it doesn't mean that you're a bad math teacher or need to change the way you teach. If emotions rise during math, just **cut the lesson short and resume later** in the day or the next day. Most of the time, you'll find that the next day goes much better.

What You'll Need

You'll use simple household items to make math hands-on, concrete, and fun in *Third Grade Math with Confidence*. Most lessons only require materials from your Math Kit, but you'll also sometimes use everyday objects to enhance the lessons.

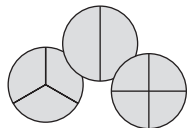
How to Create Your Math Kit

You'll use materials from your Math Kit in most lessons. Stick the following materials in a box or basket so they're always ready to go, and keep them handy when you're teaching.


- Base-ten blocks.** Base-ten blocks provide a concrete way for children to understand place value. Each block represents a different value in our number system (ones, tens, hundreds, or thousands). Look for a set with at least 50 units, 20 rods, 10 flats, and 1 large cube, either online or at school supply stores. You can also photocopy and color Blackline Master 12 (page 571) instead, but children usually find real blocks easier to maneuver.



Base-ten blocks
- 50 small counters.** Any type of small object (such as plastic tiles, Legos, blocks, plastic bears, coins, or dried beans) is fine. You can also use the units from your set of base-ten blocks. You'll occasionally need 2 colors, so make sure at least 10 of the counters are a different color than the rest.
- Coins (20 pennies, 20 nickels, 20 dimes, 10 quarters).** You can use toy coins, but children often enjoy using real coins more. (If you live outside the U.S., you can use your local currency's coins instead. See the materials note on page 10 for more details.)
- Play money (20 each of one-dollar bills, ten-dollar bills, and hundred-dollar bills; 10 each of five-dollar bills, twenty-dollar bills, and thousand-dollar bills).** Play money from a toy cash register or board game works well, or you can copy and cut out the play money on Blackline Master 13.
- Clock with hands.** Your clock should have clear, easy-to-read numbers, tick marks along the edge for each minute, and hands your child can easily move. If your family's clocks don't meet these criteria, you may want to buy an inexpensive plastic geared teaching clock.
- Fraction circles.** Either plastic or wood is fine, and you can find them online or at school supply stores. If you don't have access to fraction circles, photocopy and color Blackline Master 7 (page 551) instead.


- 1-foot (or 30-centimeter) ruler.** You will teach your child to measure with both inches and centimeters this year, so make sure your ruler is labeled with both units.
- 2 packs of playing cards and 2 dice.** You'll use playing cards or dice for many of the games. Any standard 52-card decks and regular, six-sided dice will work fine.
- Blank paper.** Any kind of paper is fine, including plain copy paper.
- Pencils.** Keep sharp pencils on hand for lessons and workbook pages.
- 1 page protector and 1 dry erase marker.** Place the dot array (Blackline Master 5) in a plastic page protector so you can write on it with a dry-erase marker.


- Binder with about 10 plastic page protectors.** (Recommended, but not required.) You'll use Blackline Masters often throughout the book. Some are for modeling important concepts, while others provide helpful reference information. Many pilot-test families found it easiest to keep track of these pages in plastic page protectors in a binder. Storing the pages in a binder also makes it easy for your child to refer to them as he completes the Practice and Review pages.



See page 531 for the full guide to the Blackline Masters. You may want to copy or print the Blackline Masters now so that you don't have to worry about it when you reach the corresponding lessons. **If you prefer to print the Blackline Masters rather than copy them from the book, you can download digital copies at welltrainedmind.com/mwc.**



You will occasionally need to save items for future lessons. This symbol will alert you if you need to save anything.

Other Supplies Needed

You'll only need your Math Kit for most lessons, but occasionally you'll need a few other common household items. You'll find these items listed in three different places in the curriculum to make sure you always know what you need:

- The preview for each unit lists all extra household items needed.
- The top of each lesson lists all supplies you'll need to teach that lesson. These lists include items from your Math Kit as well as extra household items. (Note that many lessons require paper, slips of paper, pencils, or a dry-erase marker. To save space, they are not listed unless you need more than 3 slips of paper or pieces of paper.)
- You'll find the complete list of household items needed throughout the year on pages 529-530.

Don't feel you have to gather every extra household item now. Most are common things like markers, tape, or scissors, so you can grab them right before you begin the lesson.

Note for Families Living Outside the U.S.

Math with Confidence uses American money and the U.S. customary measurement system, but it's designed to be easy to adapt to use anywhere in the world. Here are some tips for adapting the program to wherever your family lives.

- When you teach lessons with money, change the language in the lessons to match whatever currency you use. Use your country's coins in place of the American coins. For paper bills, use money from your country's currency, play money from a board game or a toy cash register, or the generic bills on Blackline Master 13. Write your country's currency symbol in place of the dollar sign.
- The measurement lessons cover both metric units (such as meters, grams, liters) and U.S. customary units (such as feet, pounds, cups). Even if you use the metric system, do teach these lessons. They often include important foundational measurement skills, and they'll help your child understand measurement concepts more deeply.

Helpful Resources

You'll find an appendix of helpful resources at the back of this book:

- Complete Picture Book List
- Scope and Sequence
- Complete Memory Work List
- Materials List
- Blackline Masters

Unit 2

Multiplication, Part 1

Overview

In Unit 2, your child will learn to write multiplication equations to match equal groups and arrays. He'll learn several important multiplication properties and vocabulary words, and he'll begin to master the $\times 1$, $\times 2$, $\times 5$, and $\times 10$ facts. He'll also begin solving simple multiplication word problems.

This unit is the first of three multiplication units in *Third Grade Math with Confidence*. Your child will learn the $\times 3$ and $\times 4$ facts in Unit 4, and then he'll tackle the rest of the multiplication facts in Unit 8. He'll also learn several mental multiplication techniques along the way. By the end of the year, he'll have a solid foundation in multiplication and be ready to learn the written process for multi-digit multiplication in fourth grade.

What Your Child Will Learn

In this unit, your child will learn to:

- Write multiplication equations with the \times sign for equal groups and arrays
- Understand that you can multiply numbers in any order
- Find answers for the $\times 1$, $\times 2$, $\times 5$, and $\times 10$ facts
- Understand that any number times zero equals zero
- Solve simple multiplication word problems

Lesson List

Lesson 2.1	Equal Groups	Lesson 2.6	Multiplication Word Problems
Lesson 2.2	Arrays	Lesson 2.7	$\times 5$ Facts
Lesson 2.3	$\times 2$ Facts	Lesson 2.8	$\times 5$ Facts on the Clock
Lesson 2.4	Multiply by 1 or Zero	Lesson 2.9	Enrichment (Optional)
Lesson 2.5	$\times 10$ Facts		

Extra Materials Needed for Unit 2

- 5 small boxes or bowls
- For optional Enrichment Lesson:
 - × *2 × 2 = Boo!: A Set of Spooky Multiplication Stories*, by Loreen Leedy. Holiday House, 1995.
 - × 24 small snack items, such as raisins, pieces of cereal, or small candies.

The suggested picture book is about Halloween. If your family does not observe Halloween, a good substitute is *Too Many Kangaroo Things to Do*, written by Stuart J. Murphy and illustrated by Kevin O'Malley. HarperCollins, 1996.

Teaching Math with Confidence: Using Strategies (Not Skip-Counting) to Master the Multiplication Facts

In Unit 2, you'll begin teaching your child the multiplication facts. But that doesn't mean you have to break out the flash cards and timed tests! Instead, you'll teach your child simple strategies for finding the answers, just as you did for the addition and subtraction facts in *First Grade Math with Confidence* and *Second Grade Math with Confidence*.

In this unit, you'll focus on the $\times 1$, $\times 2$, $\times 5$, and $\times 10$ facts. Children usually find these facts easiest to learn, so beginning with them helps build your child's confidence with multiplication. These facts are also helpful stepping stones for mastering the more difficult multiplication facts.

Your child already knows the skip-counting sequences for 2, 5, and 10, so he may be inclined to simply skip-count to find the answers. For example, to find 7×5 : 5, 10, 15, 20, 25, 30, 35. *I counted by 5 seven times, so 7 times 5 is 35.*

It's fine if your child sometimes uses a skip-counting approach when he's first making sense of multiplication. But in the long run, skip-counting is slow, inefficient, and error-prone, just like counting one by one to solve addition or subtraction problems. That's why you'll teach your child to use strategies to find the answers instead. In this unit, you'll introduce the following multiplication strategies:

- **$\times 2$ facts:** Multiplying a number times 2 is the same as doubling it. So, you can double the number to find the answer. For example, to find 2×6 , you can double 6 to find that the product is 12.
- **$\times 10$ facts:** You'll teach your child to use place-value thinking to find these facts. For example, 8×10 means "8 groups of 10." 8 tens equal 80, so $8 \times 10 = 80$.
- **$\times 5$ facts:** You'll show your child how to combine 5s into groups of 10 to find answers to these facts. For example, 4×5 means 4 groups of 5. Every 2 groups of 5 equal 10, so 4 fives equal 2 tens, or 20.

At first, your child will probably need to think through these strategies slowly and deliberately. Then, with practice, he'll become more automatic at finding their answers. A few children will know all these multiplication facts by heart by the end of the unit, but most will need more practice (and many reminders to "use your strategies") before mastering them. Your child will continue to practice the $\times 2$, $\times 5$, and $\times 10$ in warm-up games and review workbook pages throughout the year until he has them fully mastered.

Lesson 2.1

Equal Groups

Purpose	Materials
<ul style="list-style-type: none"> Practice repeated addition Understand multiplication as repeated addition Write multiplication equations to match equal groups 	<ul style="list-style-type: none"> Counters 5 small boxes or bowls
Memory Work	<ul style="list-style-type: none"> Are times in the morning a.m. or p.m.? <i>A.m.</i> Are times in the afternoon and evening a.m. or p.m.? <i>P.m.</i>

Warm-up: Practice Repeated Addition

Ask your child the following repeated addition questions orally:

- What's 5 plus 5? 10. Plus 5? 15. Plus 5? 20. Plus 5? 25.
- What's 4 plus 4? 8. Plus 4? 12. Plus 4? 16. Plus 4? 20.
- What's 3 plus 3? 6. Plus 3? 9. Plus 3? 12. Plus 3? 15.

This activity previews using repeated addition to solve multiplication problems.

Activity (A): Introduce Multiplication at the Cookie Store

Today, we'll start a brand-new math topic: multiplication! Multiplication is a very important math skill, like addition and subtraction. We'll spend a lot of time on it this year.

Let's pretend you work at the Cookie Store. Place 3 small boxes or bowls on the table and place 4 counters in each box to match the picture. One day, a customer buys 3 boxes of cookies. Each box has 4 cookies.



Modeling the picture with real counters and boxes makes the concept of multiplication more concrete. It also previews using counters to solve multiplication problems in the next activity.

One way to find the number of cookies is with repeated addition. What's 4 plus 4 plus 4? 12. Write 12 in the blank.

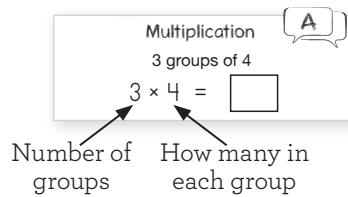
Repeated addition works fine if there are only a few groups. But if a customer bought more boxes, it could take a long time to find the total number of cookies! Multiplication is a faster way to add equal groups and find the total.

Point to the times sign in 3×4 . This sign is called the times sign. It means to multiply the numbers together. We read this problem as "3 times 4."

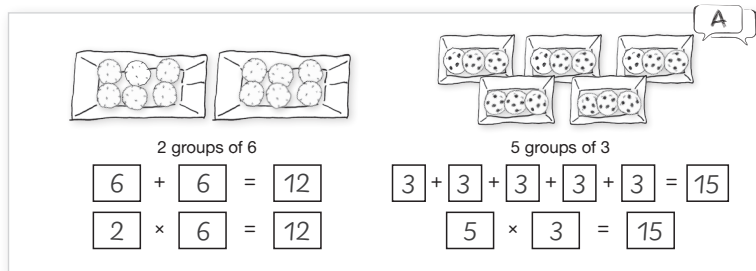
$$3 \times 4 = \square$$

↑
Times sign

The first number tells how many groups we have, and the second number tells how many are in each group. So, 3 times 4 means 3 groups of 4. What does 3 times 4 equal? 12. Write 12 in the blank.



Have your child help you write a repeated addition equation and multiplication equation for the other cookie pictures.

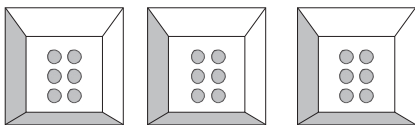


This definition of the first and second numbers is only a convention, and not a hard-and-fast mathematical definition. (In fact, some math programs describe 3×4 in the opposite way, with 3 as the size of the groups and 4 as the number of groups.) As your child will learn in Lesson 2.2, we can multiply in any order, and so the final answer does not depend on the order of the factors. It's fine if your child writes multiplication equations in either order, as long as she understands the underlying concept of equal groups.

Activity (B): Multiply at the Cookie Store

Let's pretend that you work at the Cookie Store, and I'm the customer buying cookies. I'd like 3 boxes of 6, please. Have your child fill 3 boxes or bowls with 6 counters each.

What multiplication problem matches my order? 3 times 6. How many cookies are in my order? 18. If your child isn't sure, prompt her to add $6 + 6 + 6$. Write the matching multiplication equation in the chart.



Cookie Order	Multiplication Equation
3 boxes of 6	$3 \times 6 = 18$

B

Repeat with the other cookie orders in part B. Have your child create each order with counters. Then, write the matching equation in the chart.

Cookie Order	Multiplication Equation
3 boxes of 6	$3 \times 6 = 18$
4 boxes of 4	$4 \times 4 = 16$
1 box of 8	$1 \times 8 = 8$
2 boxes of 7	$2 \times 7 = 14$
5 boxes of 2	$5 \times 2 = 10$

B

Independent Practice and Review

Have your child complete the Lesson 2.1 Practice and Review pages.

Lesson 2.2

Arrays

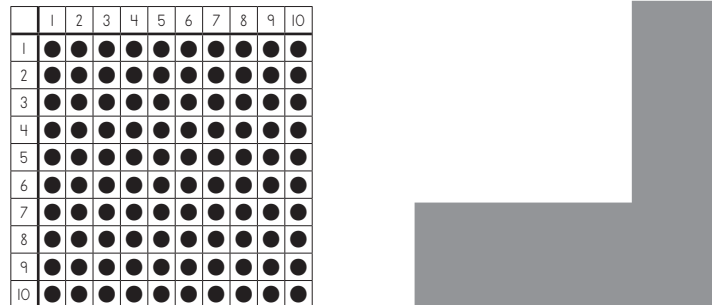
Purpose	Materials
<ul style="list-style-type: none"> Review rows and columns Write multiplication equations to match arrays Draw arrays 	<ul style="list-style-type: none"> Dot array and L-cover (Blackline Master 5)
Memory Work	<ul style="list-style-type: none"> What is another name for 12 a.m.? <i>Midnight.</i> What is another name for 12 p.m.? <i>Noon.</i>

You will need the dot array and L-cover (Blackline Master 5) for the first time in this lesson. Before the lesson, cut out the L-cover along the dotted lines and place the dot array in a plastic page protector. Keep the dot array and L-cover in your math binder.

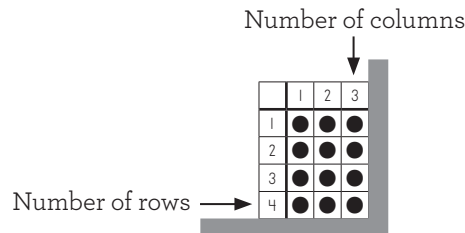
Warm-up: Review Rows and Columns on the Dot Array

In the last lesson, you learned how to write multiplication equations for equal groups. Today, you'll learn how to write multiplication equations for arrays.

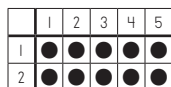
Show your child the dot array and L-cover (Blackline Master 5). This is called the dot array. An array is a group of objects arranged in rows and columns.



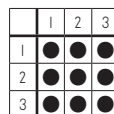
Slide the L-cover over the dot array so that 4 rows of 3 are showing. The numbers on the top and side tell the number of rows and columns so you don't have to count. How many rows are in this array? 4. How many columns are in this array? 3.



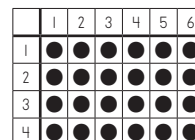
Use the L-cover to show your child the following arrays. Have your child tell how many rows and columns are in each array.



2 rows and 5 columns.



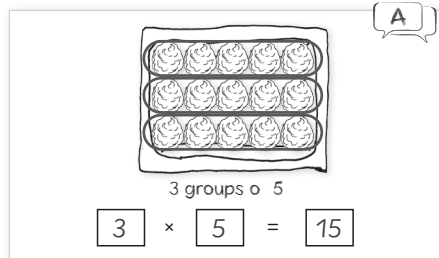
3 rows and 3 columns.



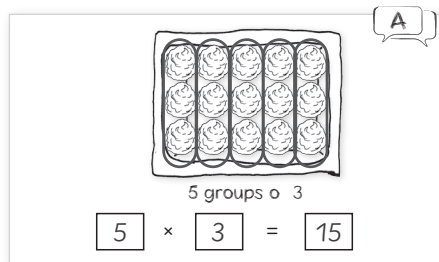
4 rows and 6 columns.

Activity (A): Write Multiplication Equations for Arrays

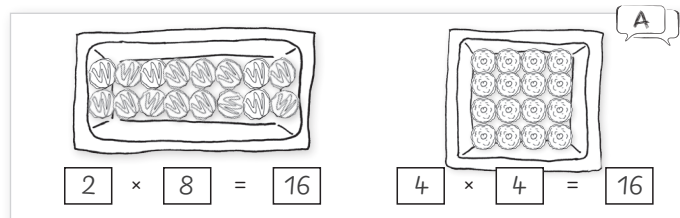
Bakers often arrange cupcakes and muffins in arrays. We can think of each row of muffins as a group. How many rows of muffins are there? 3. How many muffins are in each row? 5. So, we have 3 groups of 5. What multiplication problem means 3 groups of 5? 3 times 5. How many muffins are there in all? 15. Write the matching multiplication equation in the blanks.



Or, we can think of each column as a group of muffins. How many columns of muffins are there? 5. How many muffins are in each column? 3. So, we have 5 groups of 3. What multiplication problem means 5 groups of 3? 5 times 3. How many muffins are there in all? 15. Write the matching multiplication equation in the blanks.



The answer to a multiplication problem is called the *product*. What do you notice about the products in these two problems? *They're equal!* We can multiply numbers in any order, just like we can add numbers in any order. Complete the other equations to match the arrays.



Your child may write the factors in multiplication equations in either order.

Activity (B): Draw Arrays at the Window Factory

Builders often create arrays when they lay bricks, lay tiles, or install windows. Briefly look around your home for bricks, tiles, or panes of glass arranged in arrays.

Let's pretend you design windows at a window factory. Each window is made from an array of glass squares. Your job is to draw the plan for each window before it's made and find how many glass squares are needed.

The first order is for a window with 3 rows and 3 columns. Demonstrate how to draw a box around 3 rows and 3 columns of squares, as shown. **How many squares of glass are in this window?** 9. Write 9 in the chart.

Order (Rows x Columns)	Total Squares
3×3	9

Repeat with the other window orders.

Order (Rows x Columns)	Total Squares
3×3	9
7×2	14
1×6	6
5×5	25
3×8	24

This activity previews finding area. Your child will study area in Unit 9.

Independent Practice and Review

Have your child complete the Lesson 2.2 Practice and Review pages.

Lesson 2.3

$\times 2$ Facts

Purpose	Materials
<ul style="list-style-type: none"> Review doubling numbers Introduce $\times 2$ facts Multiply in any order to find $\times 2$ facts 	<ul style="list-style-type: none"> Dot array and L-cover (Blackline Master 5) Paper Playing cards Counters
Memory Work	<ul style="list-style-type: none"> How many minutes equal a half-hour? 30. How many minutes equal a quarter-hour? 15.

Warm-up: Review Doubling Numbers

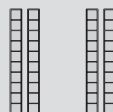
What does it mean to double something? *Sample answer: Make it twice as much.* Have your child double the following numbers:

- Double 3. 6.
- Double 6. 12.
- Double 5. 10.
- Double 8. 16.
- Double 9. 18.
- Double 7. 14.
- Double 10. 20.
- Double 20. 40.
- Double 40. 80.
- Double 50. 100.

If your child has trouble, model the questions with counters or base-ten blocks.



Double 3 is 6.



Double 20 is 40.

Activity (A): Introduce the $\times 2$ Multiplication Facts

The multiplication facts are the multiplication problems from 1×1 up to 10×10 . This year, you'll learn the multiplication facts so that you know them by heart, just like you know the addition and subtraction facts. Today, you'll start learning the $\times 2$ facts.

See the Unit 2 **Teaching Math with Confidence** for more on how *Math with Confidence* approaches mastering the multiplication facts.

Show your child the list of $\times 2$ facts in part A. **This list of multiplication facts is called the "times 2 table."** Show 1×2 on the dot array. **What's 1 times 2?** 2. Write 2 in the blank.

$$1 \times 2 = \boxed{2}$$



Show 2×2 on the dot array. **What's 2 times 2?** 4. Write 4 in the blank.

$$2 \times 2 = \boxed{4}$$



Repeat with the rest of the $\times 2$ facts. Encourage your child to add 2 to each previous answer to find the next answer.

$1 \times 2 =$	<input type="text" value="2"/>	$6 \times 2 =$	<input type="text" value="12"/>
$2 \times 2 =$	<input type="text" value="4"/>	$7 \times 2 =$	<input type="text" value="14"/>
$3 \times 2 =$	<input type="text" value="6"/>	$8 \times 2 =$	<input type="text" value="16"/>
$4 \times 2 =$	<input type="text" value="8"/>	$9 \times 2 =$	<input type="text" value="18"/>
$5 \times 2 =$	<input type="text" value="10"/>	$10 \times 2 =$	<input type="text" value="20"/>

What patterns do you notice? *Sample answers: The answers are the even numbers in order. The answers are the numbers we say when we count by 2s. The answers are doubles.*

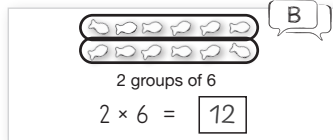
Noticing and discussing patterns in multiplication tables helps children memorize them more easily and quickly. You'll discuss each multiplication table in this way.

Activity (B): Multiply in Any Order to Find $\times 2$ Facts

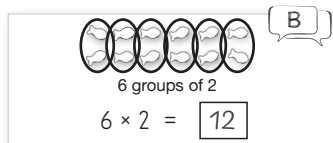
Use a piece of paper to cover the completed $\times 2$ table.

Covering the completed table prevents your child from referring to it during the next activity.

If we think of each row as a group, we have 2 groups of 6. What's 6 plus 6? 12. Point to each group of 2 as you ask: **So, what's 2 times 6? 12.** Write 12 in the blank. **You can also think of 2 times 6 as double 6. Double 6 is 12, so 2 times 6 is 12.**



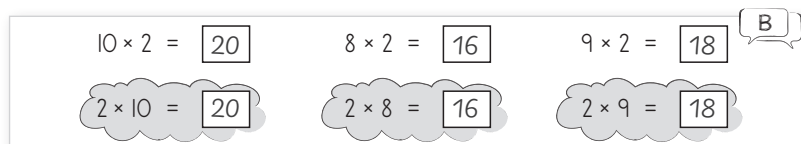
If we think of each column as a group, we have 6 groups of 2. Point to each group of 2 as you ask: **What's 2 plus 2? 4. Plus 2? 6. Plus 2? 8. Plus 2? 10. Plus 2? 12. So, what's 6 times 2? 12.** Write 12 in the blank.



Did the total number of goldfish change when we switched the order of the numbers? No. 6 times 2 and 2 times 6 both have the same total number of goldfish. The two equations just describe the array in two different ways.

We can multiply numbers in any order, just like we can add numbers in any order. This helps find answers to the $\times 2$ facts.

10 times 2 means 10 groups of 2. Adding up 10 groups of 2 would take a while! Instead, let's think of this as 2 groups of 10 and double 10 to find the answer. What's double 10? 20. So, what's 10 times 2? 20. Write 20 in both blanks. Repeat with the other multiplication problems.



Activity (C): Play Multiplication Crash ($\times 2$)

Play Multiplication Crash.

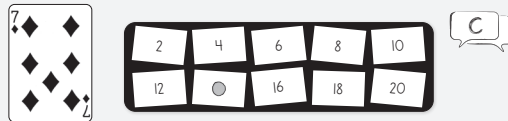
Multiplication Crash ($\times 2$)

Materials: Deck of playing cards with jacks, queens, and kings removed (40 cards total); 10 counters of two different colors each

Object of the Game: Have the most counters on the game board at the end of the game.

Shuffle the cards and place the stack face down on the table. Give 10 counters of one color to one player and 10 counters of a different color to the other player.

On your turn, flip over the top card. Multiply the card by 2, say the matching multiplication fact, and place a counter on the matching square. For example, if you flip over a 7, say “2 times 7 equals 14” and place a counter on 14.



If the other player already has a counter on the square, you may “crash” into their counter, remove it, and place your own counter on the square. Continue until all the squares are filled. Whoever has more counters on the board at the end wins the game.

Learning the multiplication facts by heart requires lots of practice! You’ll find many quick games like this throughout the program to provide short, fun, and targeted multiplication practice sessions.

Independent Practice and Review

Have your child complete the Lesson 2.3 Practice and Review pages.

Lesson 4.5

Pictographs

Purpose

- Practice $\times 4$ facts
- Review pictographs

Materials

- Multiplication Strategies chart (Blackline Master 6)
- Playing cards
- Counters

Memory Work

- Name the multiples of 4 in order. 4, 8, 12... Stop your child when she reaches 40.

Warm-up (A): Play Multiplication Undercover ($\times 4$)

In the last lesson, you learned how to use the $\times 2$ facts to find answers to the $\times 4$ facts. Read aloud the $\times 4$ strategy on the Multiplication Strategies chart (Blackline Master 6). Briefly discuss the example.

4 Double the related $\times 2$ fact.

<table style="width: 100%; text-align: center;"> <tr><td>⊛</td><td>⊛</td><td>⊛</td><td>⊛</td><td>⊛</td><td>⊛</td></tr> <tr><td>⊛</td><td>⊛</td><td>⊛</td><td>⊛</td><td>⊛</td><td>⊛</td></tr> </table>	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛	⊛
⊛	⊛	⊛	⊛	⊛	⊛							
⊛	⊛	⊛	⊛	⊛	⊛							

$2 \times 7 = 14$
 Double 14 is 28.
 $4 \times 7 = 28$

Today, you'll practice the $\times 4$ facts more and use multiplication to interpret pictographs. Play Multiplication Undercover.

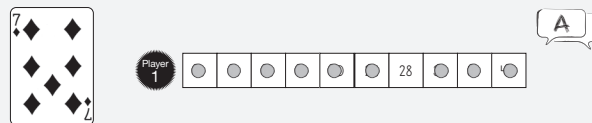
Multiplication Undercover ($\times 4$)

Materials: Deck of playing cards with jacks, queens, and kings removed (40 cards total); counters

Object of the Game: Uncover all the spaces on your game board first.

Shuffle the cards and place the stack face down on the table. Each player takes 10 counters and covers every number on her game board.

On your turn, flip over the top card. Multiply the card by 4, say the matching multiplication fact, and remove a counter from the matching square on your game board. For example, if you flip over a 7, say "7 times 4 is 28" and remove the counter on the 7th spot on the game board. After you remove the counter, check that you said the correct product.



If you have already removed the counter on that square, say the matching multiplication fact but do not remove any counters. Whoever removes all their counters first wins the game.

As you play, encourage your child to use the uncovered squares to help figure out the answers on the covered squares.

Activity (B):**Use Multiplication to Interpret a Pictograph with an Increment of 10**

Luke helped sell donuts and pony ride tickets at the Harvest Festival. Briefly discuss any experiences your child has with festivals or carnivals. He made a pictograph to show how many donuts were sold. The word “pictograph” is a combination of “picture” and “graph.” A pictograph is like a bar graph, but it uses pictures or symbols instead of bars.

Use the following questions to discuss the pictograph:

- **What’s the title of the graph?** *Donut Sales.*
- **What days did they sell donuts?** *Friday, Saturday, and Sunday.*
- Point to the key at the bottom of the pictograph. **This part is called the key, because it’s the key to understanding the pictograph. In this pictograph, each picture equals 10 donuts.**



Since each picture stands for 10 donuts, we multiply the number of pictures by 10 to find how many donuts were sold. The Friday row has 3 pictures, so we multiply 3 times 10 to find out how many donuts were sold. Write “ 3×10 ” in the chart. What’s 3 times 10? 30.

Write 30 in the chart.

Day	Multiplication Problem	Number of Donuts
Friday	3×10	30

If your child doesn’t understand why you multiplied by 10, place 3 groups of 10 counters on the table. **Each picture stands for 10 donuts. So, since we have 3 groups of 10, we can multiply 3 times 10 to find the total number of donuts.**

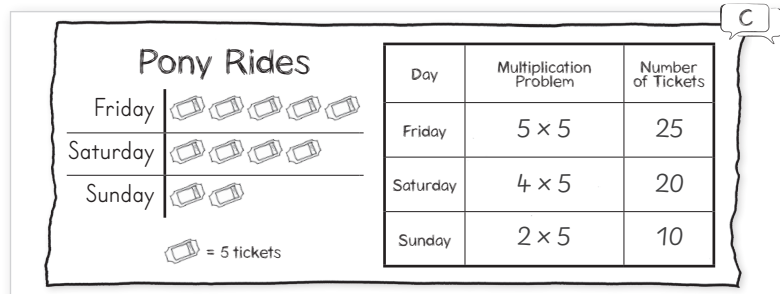
Have your child use the same reasoning to complete the chart for Saturday and Sunday. Then, use the following questions to discuss the pictograph:

- **Which day did they sell the most donuts?** *Saturday.*
- **Which day did they sell the fewest donuts?** *Friday.*
- **How many more donuts did they sell on Saturday than Sunday?** *10 donuts.*
- **How many fewer donuts did they sell on Friday than Saturday?** *30 donuts.*
- **How many donuts did they sell in all?** *140 donuts.*

Day	Multiplication Problem	Number of Donuts
Friday	3×10	30
Saturday	6×10	60
Sunday	5×10	50

Activity (C):**Use Multiplication to Interpret a Pictograph with an Increment of 5**

Luke also made a graph about how many pony ride tickets were sold. Each pony ride at the festival costs 1 ticket. What does each picture stand for in this pictograph? *5 tickets*. Have your child use multiplication to complete the chart.



Then, use the following questions to discuss the pictograph:

- Which day did they sell the most pony ride tickets? *Friday.*
- Which day did they sell the fewest pony ride tickets? *Sunday.*
- How many more pony ride tickets did they sell on Saturday than Sunday? *10 tickets.*
- How many fewer pony ride tickets did they sell on Saturday than Friday? *5 tickets.*
- How many pony ride tickets did they sell in all? *55 tickets.*

Independent Practice and Review

Have your child complete the Lesson 4.5 Practice and Review workbook pages.

Lesson 6.2

Read and Write Fractions

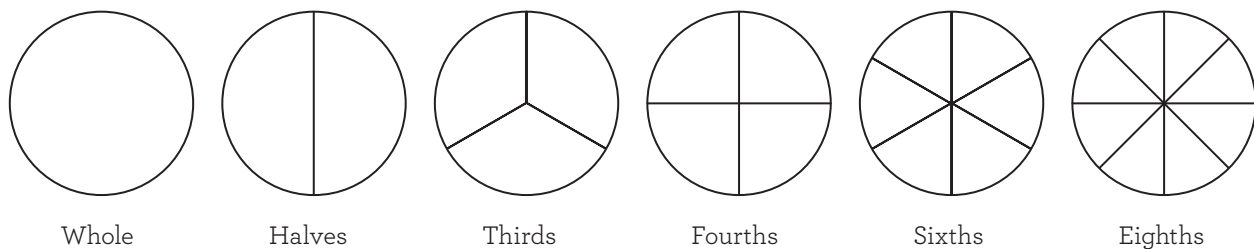
Purpose	Materials
<ul style="list-style-type: none"> Practice identifying fractional parts of circles Draw lines to split circles into fractional parts Identify the numerator and denominator in a fraction and understand what each number means Read and write fractions 	<ul style="list-style-type: none"> Fraction circles Markers or colored pencils
Memory Work	• Name the multiples of 4 in order. 4, 8, 12... Stop your child when he reaches 40.

You will need fraction circles for the first time in this lesson. If you do not have plastic or wooden fraction circles, use the paper fraction circles on Blackline Master 7 instead.

If your fraction circles have fractions printed on one side, flip the circles over so that only the blank side shows. If they have fractions printed on both sides, cover the fractions with a small piece of masking tape.

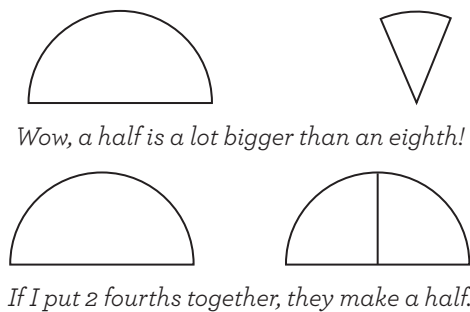
Warm-up: Introduce Fraction Circles

In the last lesson, we split rectangles into fractional parts. We can also split other shapes into fractional parts. Show your child the following fraction circles and organize them as shown. Have your child tell what fractional parts each circle is split into.



You will only need halves, thirds, fourths, sixths, eighths, and one whole circle for this unit.

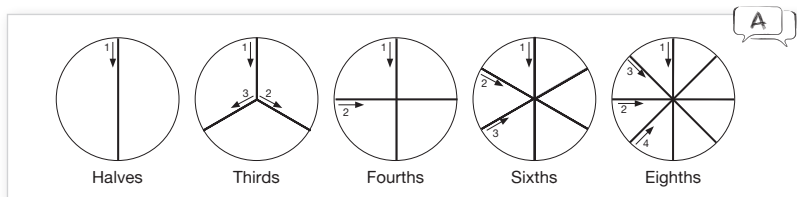
With your child, spend a few minutes comparing the sizes of the pieces and finding combinations of pieces that equal other pieces. For example: **Which piece is biggest? Which piece is smallest? How many fourths does it take to make a half?**



Activity (A): Draw Lines to Split Circles into Fractional Parts

Today, we'll pretend we work at the Fraction Diner. At the Fraction Diner, customers can order their pancakes cut into fractional parts. They can also ask for different toppings on each part!

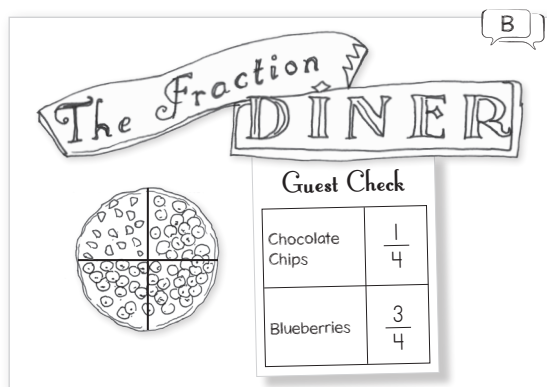
We'll need to draw fractional parts on some of the pancakes. Drawing fractional parts for circles can be tricky, so let's practice first. Have your child trace the lines on the circles in part A and split each circle into fractional parts.



Without guidance, children often draw haphazard lines that come from the center of the circle like spokes in a wheel. Always encourage your child to use this sequence of strokes so that the parts turn out roughly equal to each other.

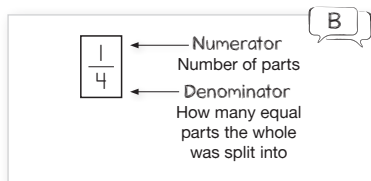
Activity (B): Introduce Numerator and Denominator

The first customer asked to have his pancake cut into fourths. He asked for chocolate chips on one-fourth of the pancake and blueberries on three-fourths of the pancake.



Point to the 1 in $\frac{1}{4}$. The top number tells the number of parts. It's called the *numerator*. Do you hear how numerator starts like the word number? That's because it tells the number of parts.

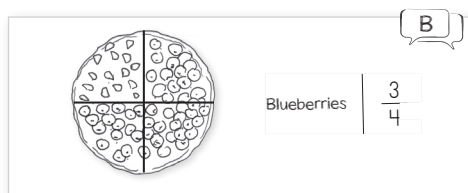
Point to the 4 in $\frac{1}{4}$. The bottom number tells how many equal parts the whole was split into. It's called the *denominator*. It comes from a Latin word that means to name something. That's because it names what kind of parts the whole was split into, like fourths, halves, or sixths.



See the Unit 6 **Teaching Math with Confidence** to learn how this definition of fractions helps reduce the cognitive load required to understand fractions.

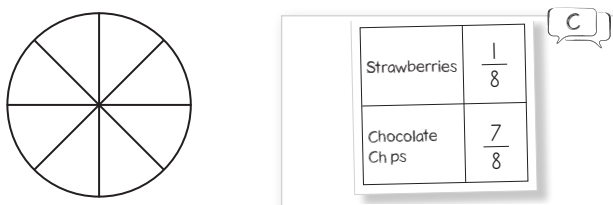
When you read fractions, always point to the corresponding numbers as you name them. For example, when you say "one-fourth," point to the 1 as you say "one" and the 4 as you say "fourth." This reinforces the idea that the top number in a fraction tells the quantity of parts, while the bottom number tells the kind of parts.

Point to $\frac{3}{4}$ on the guest check. We read this fraction as three-fourths. The customer wants 3 parts to have blueberries, so the numerator is 3. The pancake was split into 4 equal parts, so the denominator is 4.



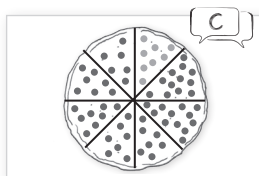
Activity (C): Read Fractions at the Fraction Diner

Time to put toppings on some pancakes! This customer wants strawberries on one-eighth of her pancake. She wants chocolate chips on seven-eighths of her pancake. Have your child find the fraction circle divided into eighths. Have him pretend to put strawberries on one-eighth and chocolate chips on the other seven-eighths.

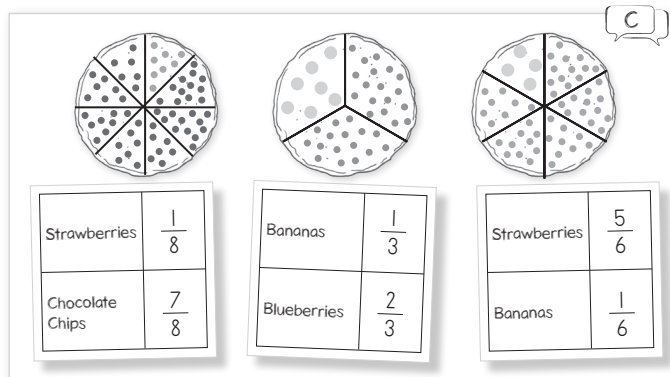


Now, let's color the pancake on the workbook page to match.

- **First, draw lines to split the pancake into eighths.** Have your child draw lines that split the pancake into eighths.
- **Next, draw red dots on one-eighth of the pancake to stand for the strawberries.** Have your child use a red crayon or colored pencil to draw dots on one-eighth of the circle.
- **Last, draw brown dots on seven-eighths of the pancake to stand for the chocolate chips.** Have your child use a brown crayon or colored pencil to draw brown dots on seven-eighths of the circle.



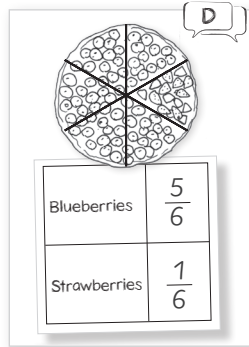
Looks delicious! Repeat this process with the other pancake orders. Have your child draw yellow circles to represent bananas and blue dots to represent blueberries.



Activity (D): Write Fractions for Pancake Toppings

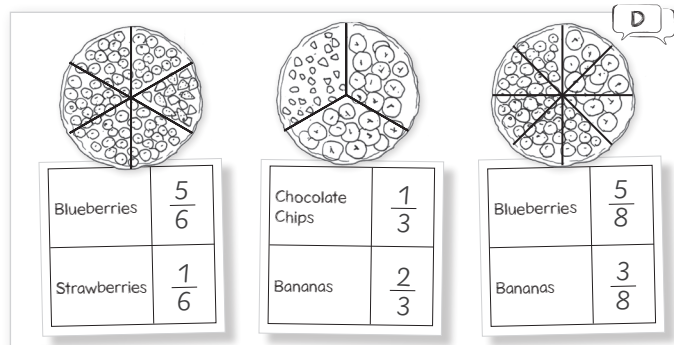
Now, you get to be the server and write down the orders! Point to the first pancake in part D. How many parts of the pancake have blueberries? 5. How many parts was the whole pancake split into? 6. So, each part of the pancake is a sixth. Five-sixths of the pancake has blueberries. Have your child write $\frac{5}{6}$ in the blank.

How many parts of the pancake have strawberries? 1. How many parts was the whole pancake split into? 6. One-sixth of the pancake has strawberries. Have your child write $\frac{1}{6}$ in the blank.



The fraction blanks in this book always have a horizontal line (and not a diagonal one) so your child can easily see which number is on top and which number is on the bottom.

Have your child complete the other guest checks in the same way.

**Independent Practice and Review**

Have your child complete the Lesson 6.2 Practice and Review workbook pages.

Your child may notice some equivalent fractions as he completes the Practice workbook page. (For example, he may notice $\frac{3}{6}$ is the same as $\frac{1}{2}$ of a waffle.) Have him write the fraction that best matches the parts shown on the page. He'll learn about equivalent fractions in Lesson 6.6.

Lesson 9.12

Enrichment (Optional)

Purpose

- Practice memory work
- Understand area in a real-life context
- Measure the perimeter and area of a room
- Summarize what your child has learned and assess your child's progress

Materials

- *Bigger, Better, Best!*, written by Stuart J. Murphy and illustrated by Marsha Winborn
- Tape measure

Warm-up: Review Memory Work

Quiz your child on all memory work through Unit 9. See pages 527-528 for the full list.

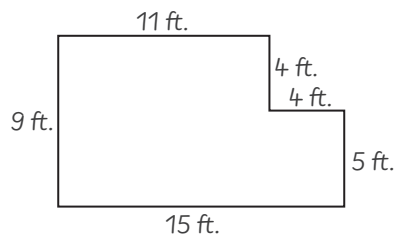
Math Picture Book: *Bigger, Better, Best!*

Read *Bigger, Better, Best!*, written by Stuart J. Murphy and illustrated by Marsha Winborn. As you read, discuss the creative units the children use to measure area.

Enrichment Activity: Measure the Perimeter and Area of a Room

You have learned a lot about perimeter and area in this unit! Today, we'll measure the perimeter and area of your bedroom.

Help your child make a rough sketch of his bedroom. Use a tape measure to measure the length of each wall. Round each length to the nearest foot or meter, and label the sketch accordingly. Then, help your child find the perimeter and area of the room.



If your family uses the metric system, use meters and square meters for this activity. If your family uses the U.S. customary system, use feet and square feet.

If any of the lengths are greater than 10, help your child split the room into smaller areas, find the area of each part, and then add them to find the total area (as in Lesson 9.9).

Unit Wrap-up

Have your child complete the Unit 9 Wrap-up.

Lesson 11.6

Add and Subtract Four-Digit Numbers

Purpose

- Practice multiplication facts
- Add and subtract four-digit numbers with the addition and subtraction algorithms
- Solve distance word problems

Materials

- Playing cards

Memory Work

- **Name the multiples of 8 in order.** 8, 16, 24... Stop your child when he reaches 80.

In this lesson, your child will learn to add and subtract four-digit numbers with the addition and subtraction algorithms. Most children have little trouble extending these algorithms to four-digit numbers, so this lesson does not include a step-by-step explanation. If your child needs more support, use the Addition Algorithm diagram and Subtraction Algorithm diagram (from Blackline Master 4) to guide him. Model each problem with play money, and demonstrate the trades with paper bills.

Warm-up: Play Over Under ($\times 8$)

Play one round of Over Under ($\times 8$). Use the same general directions as Over Under ($\times 6$) from Lesson 9.4 (page 284). Multiply each card by 8. If the product is less than 45, the player who is “Under” wins the card. If the product is greater than 45, the player who is “Over” wins the card.

Activity (A): Add and Subtract Four-Digit Numbers

You have already learned how to use the addition and subtraction algorithms to add and subtract two- and three-digit numbers. Today, you’ll use these algorithms to add and subtract four-digit numbers.

Show your child the first exercise in part A ($3,984 + 2,632$). **Before we add the numbers, we’ll first estimate the sum.** Have your child round each addend to the nearest thousand and estimate the sum.

	3	9	8	4
+	2	6	3	2

Estimate A

4,000
+ 3,000
7,000

Now, add the numbers to find the exact sum. Use the same steps that you use to add two- or three-digit numbers. Have your child use the addition algorithm to add the numbers. If needed, use play money to model the trading.

	1	1			
	3	9	8	4	
+	2	6	3	2	
	6	6	1	6	

Estimate A

4,000
+ 3,000
7,000

Repeat with the subtraction problem. Have your child estimate the difference and then find the exact difference. If needed, use play money to model the trading.

4	1	9	6
-	2	8	7
<hr/>			
1	3	1	7

Estimate

$$\begin{array}{r} 4,000 \\ - 3,000 \\ \hline 1,000 \end{array}$$

Adding and subtracting four-digit numbers is just like adding and subtracting three-digit numbers. We can even add and subtract numbers in the millions or billions in the exact same way!

See the Unit 11 **Teaching Math with Confidence** (page 346) for more on how this solid foundation in whole number addition and subtraction prepares your child to solve problems involving both large and small numbers in future grades.

Activity (B): Add and Subtract to Solve Distance Word Problems

Show your child part B. **Now, you get to plan a pretend trip! You get to visit three cities. You can only travel between cities that have lines connecting them on the map.** Have your child choose three connected cities to pretend to visit. Write the cities' names in the itinerary.

Let's find the total length of your trip. How far is it from your first city to your second city? Answers will vary. How far is it from your second city to your third city? Answers will vary. Have your child write the numbers in the blank grid and find their sum.

If your child's trip is longer than 10,000 miles, demonstrate how to write a 1 in the ten-thousands-place. Your child will learn to add numbers greater than 10,000 in fourth grade.

Which flight travels a longer distance? Answers will vary. Let's find how much longer the longer flight is than the shorter flight. Have your child write the longer distance on the top line of the next blank grid and the shorter distance on the middle line. Have him subtract to find the difference between them.

Itinerary	Total Distance Traveled	Difference in Flight Lengths
<div style="border: 1px solid gray; padding: 2px; display: inline-block;">New York City</div> <div style="border: 1px solid gray; padding: 2px; display: inline-block;">London</div> <div style="border: 1px solid gray; padding: 2px; display: inline-block;">Beijing</div>	$\begin{array}{r} 3,469 \\ + 5,055 \\ \hline 8,524 \end{array}$	$\begin{array}{r} 5,055 \\ - 3,469 \\ \hline 1,586 \end{array}$

Sample completed first itinerary.

You get to plan one more trip! Have your child choose another three cities. Again, have him find the total length of the trip and the difference between the lengths of the two flights.

Independent Practice and Review

Have your child complete the Lesson 11.6 Practice and Review workbook pages.

Unit 11 Checkpoint

What to Expect at the End of Unit 11

By the end of Unit 11, most children will be able to do the following:

- Read, write, and compare numbers to 10,000.
- Write four-digit numbers in expanded form and model them with base-ten blocks or play money.
- Round numbers to the nearest thousand.
- Mentally add up to identify missing addends to the next thousand (as in $5,600 + __ = 6,000$).
- Use place-value thinking to mentally solve problems like $3,800 + 500$ or $4,100 - 300$. Many children will still find these problems quite challenging and need to model them with play money.
- Use the addition and subtraction algorithms to add and subtract four-digit numbers. Many children will still need help when subtracting across zero.
- Subtract to find elapsed time between years. Some children will have only a hazy understanding of the concept of elapsed time. Many children will still need help setting up the subtraction problems correctly.

Is Your Child Ready to Move on?

In Unit 12, your child will learn the $\div 3$, $\div 4$, and $\div 6$ facts. Before moving on to Unit 12, your child should understand the concept of division and be able to use multiplication to solve division problems. She will use the $\times 3$, $\times 4$, and $\times 6$ facts as stepping stones to the related division facts, so she should also be able to find answers to the $\times 3$, $\times 4$, and $\times 6$ facts within several seconds.

What to Do If Your Child Needs More Practice

If your child can't find the answers to the $\times 3$, $\times 4$, and $\times 6$ facts within several seconds, spend a day or two practicing these facts before moving on to Unit 12. **If you practice these multiplication facts for a day or two and find that your child does not have them fully mastered, move on to Unit 12 anyway.** Children vary in how long it takes them to develop speed and fluency with the multiplication facts, and your child will continue to practice them as she studies division in Unit 12.

Activities for Practicing the $\times 3$, $\times 4$, and $\times 6$ Facts

- Multiplication Cover-Up ($\times 3$) (Lesson 4.1)
- Tic-Tac-Toe Crash ($\times 3$) (Lesson 4.2)
- Multiplication Crash ($\times 4$) (Lesson 4.4)
- Multiplication Undercover ($\times 4$) (Lesson 4.5)
- Dice Tic-Tac-Toe (Lesson 4.6)
- Tic-Tac-Toe Crash ($\times 6$) (Lesson 8.1)
- Multiplication Bingo ($\times 6$) (Lesson 8.2)
- Over Under ($\times 6$) (Lesson 9.4)

Unit 12

Division, Part 2

Overview

In Unit 10, you introduced your child to the concept of division and taught him to write division equations. He also began to master the $\div 2$, $\div 5$, and $\div 10$ facts. In this unit, your child will use the $\times 3$, $\times 4$, and $\times 6$ facts as stepping stones to learn the $\div 3$, $\div 4$, and $\div 6$ facts. You'll also gently introduce him to the long division algorithm and teach him how to interpret remainders in context.

This unit is the second of three division units in *Third Grade Math with Confidence*. Your child will tackle the rest of the division facts in Unit 15.

What Your Child Will Learn

In this unit, your child will learn to:

- Find answers for the $\div 3$, $\div 4$, and $\div 6$ facts
- Divide small numbers with the long division algorithm
- Solve division word problems with remainders and interpret remainders in context

Lesson List

Lesson 12.1	$\div 3$ Facts	Lesson 12.6	Two Ways to Write Division
Lesson 12.2	Investigate Dividing with 1 and 0	Lesson 12.7	Preview Long Division
Lesson 12.3	$\div 4$ Facts	Lesson 12.8	Introduce Long Division
Lesson 12.4	Division Word Problems	Lesson 12.9	Interpret Remainders
Lesson 12.5	$\div 6$ Facts	Lesson 12.10	Enrichment (Optional)

Extra Materials Needed for Unit 12

- For optional Enrichment Lesson:
 - × *Divide and Ride*, written by Stuart J. Murphy and illustrated by George Ulrich. HarperCollins, 1997

Teaching Math with Confidence: Why Introduce Long Division with Simple Problems?

In Unit 12, you'll teach your child more division facts and introduce him to the long division algorithm. Like the addition and subtraction algorithms, the long division algorithm is an efficient, reliable, and step-by-step method for solving division problems. However, children often find long division much more challenging to learn than the other algorithms, for several reasons:

- Long division has many steps to remember, and the steps are recorded in a counter-intuitive order. Instead of moving from right to left like the addition and subtraction algorithms, you have to toggle between recording numbers above the dividend and below the dividend.
- Long division requires excellent estimation skills, number sense, and fluency with the multiplication and division facts. If children don't have the facts memorized, they spend so much of their working memory on these subskills that they have trouble remembering the steps.

- Long division is often taught with little conceptual understanding, so children don't grasp the meaning behind each step.

To avoid this frustration, *Math with Confidence* spreads long division instruction over third and fourth grade. This year, you'll give your child a gentle introduction to long division with small numbers. Next year, you'll teach him how to use long division to divide larger numbers. Once he's had plenty of time to master the steps with small numbers, the larger numbers won't feel so overwhelming. Here's how you'll take the stress out of long division as you teach it in this unit:

- You'll use only two-digit numbers as dividends, and all of the quotients will be less than 10. That way, your child will only have to perform 3 steps to solve each problem.
- All of the long division problems use the easier multiplication facts, like 4×3 or 5×5 . Your child has practiced these facts since Unit 4, so he likely knows most of them automatically. This will allow him to use his working memory to focus on the long division process, not the multiplication facts. You've also given him practice at estimating products and comparing a product to another number (for example, in games like Multiplication Greatest to Least), so he's well-prepared with the number skills necessary for long division.
- You'll focus on conceptual understanding as much as procedural fluency. You'll use counters to make the steps concrete, and you'll use a familiar division context (packing items into boxes) to help your child connect the steps to what he already knows about division.

Long division may feel unnecessarily complicated for the simple problems in this unit, especially for children who can easily solve these problems in their heads. If your child resists writing out the steps, reassure him that there are only a few problems to solve with long division in each lesson. Next year, this practice will pay off as he tackles complicated, multi-digit long division problems with confidence.

Lesson 12.1

$\div 3$ Facts

Purpose

- Review $\times 3$ facts
- Practice $\div 3$ facts

Materials

- Counters
- Die

Memory Work

- Name the multiples of 3 in order. 3, 6, 9... Stop your child when she reaches 30.

Warm-up: Review $\times 3$ Facts

In Unit 4, you learned the $\times 3$ facts. Today, you'll use the $\times 3$ facts to find answers to the $\div 3$ facts. Do a brief oral review of the following $\times 3$ facts. Encourage your child to respond as quickly as possible for each fact.

- $4 \times 3 = 12$
- $7 \times 3 = 21$
- $10 \times 3 = 30$
- $5 \times 3 = 15$
- $3 \times 3 = 9$
- $9 \times 3 = 27$
- $6 \times 3 = 18$
- $8 \times 3 = 24$

Activity (A): Introduce $\div 3$ Facts

Let's pretend you're making crafts and have 12 pompoms. You want to put 3 pompoms on each craft, so you divide 12 by 3 to find how many crafts you can make.

12 divided by 3 means "How many groups of 3 equal 12?" What times 3 equals 12? 4. Write 4 in the multiplication equation blank. So, what does 12 divided by 3 equal? 4. Write 4 in the division equation blank. Have your child draw circles around each group of 3 pompoms to confirm her answer.



Have your child complete part A. Encourage her to use multiplication to find the answers.

$6 \div 3 =$ <input type="text" value="2"/>	$9 \div 3 =$ <input type="text" value="3"/>	$3 \div 3 =$ <input type="text" value="1"/>
$15 \div 3 =$ <input type="text" value="5"/>	$18 \div 3 =$ <input type="text" value="6"/>	$30 \div 3 =$ <input type="text" value="10"/>
$21 \div 3 =$ <input type="text" value="7"/>	$27 \div 3 =$ <input type="text" value="9"/>	$24 \div 3 =$ <input type="text" value="8"/>

If your child has trouble using multiplication to find the answers (or begins skip-counting), demonstrate how to use the dot array to find the answer more efficiently. For example, for $27 \div 3$: **We want to know what times 3 equals 27. Let's try some numbers.** Slide the L-cover to show 5 rows of 3. **What's 5 times 3? 15. Hmm, too low!**

$$27 \div 3 = \square$$

	1	2	3
1	●	●	●
2	●	●	●
3	●	●	●
4	●	●	●
5	●	●	●

Slide the L-cover to show 8 rows of 3. **What's 8 times 3? 24. Still too low!**

$$27 \div 3 = \square$$

	1	2	3
1	●	●	●
2	●	●	●
3	●	●	●
4	●	●	●
5	●	●	●
6	●	●	●
7	●	●	●
8	●	●	●

We need 1 more group of 3 to make 27. Slide the L-cover to show 9 rows of 3. **9 groups of 3 equal 27, so what does 27 divided by 3 equal? 9.**

$$27 \div 3 = \boxed{9}$$

	1	2	3
1	●	●	●
2	●	●	●
3	●	●	●
4	●	●	●
5	●	●	●
6	●	●	●
7	●	●	●
8	●	●	●
9	●	●	●

See the Unit 2 **Teaching Math with Confidence** (page 52) for why it's better to avoid relying on skip-counting.

Activity (B): Play Climb and Slide

Play Climb and Slide. Encourage your child to use related multiplication facts to find the answers to the division problems in the game. Use the dot array as needed to model the problems. See Lesson 3.3 (page 90) for full directions.



Save the Climb and Slide game board to use again in Lesson 12.2.

Independent Practice and Review

Have your child complete the Lesson 12.1 Practice and Review workbook pages.

Lesson 14.5

Elapsed Time with Hours and Minutes

Purpose

- Practice multiplication facts
- Find times that are a certain number of hours and minutes later than a given time
- Find the number of hours and minutes that elapse between two times

Materials

- Playing cards
- Counters

Memory Work

- What do we call a quadrilateral with 4 equal sides? *A rhombus.*
- What do we call a quadrilateral with 4 right angles and 4 equal sides? *A square.*

Warm-up (A): Play Multiplication Undercover ($\times 8$)

Use the game boards in part A to play Multiplication Undercover. Use the same general directions as in Lesson 4.5. Multiply the number on your card by 8, say the matching multiplication fact, and remove the counter from the matching square on your game board.

Activity (B): Make a Day Camp Schedule

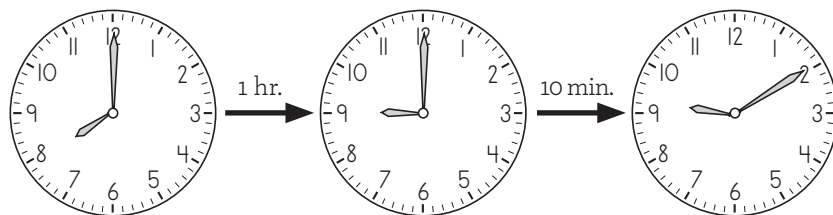
In the last two lessons, you solved elapsed time problems with minutes. Today, you'll learn how to solve elapsed time problems with hours and minutes.

The camp director is making the schedule for the day. We'll help him fill in the rest of the schedule. Briefly discuss any experience your child has with day camp or the activities on the schedule.

Camp starts at 8:00 in the morning. Set a clock to 8:00. **Outdoor skills lasts for 1 hour and 10 minutes, so it will end 1 hour and 10 minutes later than 8:00.**

Jumping forward 1 hour and 10 minutes is like adding 1 hour and 10 minutes. First, let's add the hours. What time is 1 hour after 8:00? 9:00. Have your child turn the minute hand forward 1 hour.

Now, let's add the minutes. What time is 10 minutes after 9:00? 9:10. Have your child turn the minute hand forward 10 minutes more.



Adding the hours and minutes separately is similar to the way your child learned to add the tens and ones separately when she solved mental addition problems in Unit 1.

Outdoor skills ends at 9:10, so Capture the Flag will begin at 9:10. Write 9:10 as the end time for Outdoor Skills and the start time for Capture the Flag.

Have your child turn the hands on the clock to complete the rest of the day camp schedule. Encourage her to first add the hours and then add the minutes for each activity.

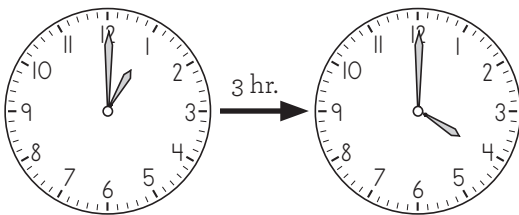
Activity	Start Time	End Time
Outdoor Skills (1 hr. 10 min.)	8:00	9:10
Capture the Flag (1 hr. 15 min.)	9:10	10:25
Hike (1 hr. 45 min.)	10:25	12:10
Lunch and Sing-along (50 min.)	12:10	1:00
Afternoon Choice Time (3 hr. 30 min.)	1:00	4:30

Activity (B): Find Elapsed Time for Camp Activities

Show your child the list of activity choices in part B. **In the afternoons, the campers get to choose which activities they want to do. They can choose more than one activity each day, but each activity is only available at certain times.** Briefly discuss which activities your child would like to choose from the list.

Swimming starts at 1:00 and goes until 4:00. Set a clock to 1:00. **The hour hand will point to the 4 at the end of swimming. How many hours pass from 1:00 to 4:00?** *3 hours.* If your child isn't sure, point out that the hour hand goes through 3 hours from 1:00 to 4:00. Write "3 hr." in the blank.

Have your child check her answer by turning the clock's hands until they reach 4:00. Have her count how many full circles the minute hand makes as she turns the hands.



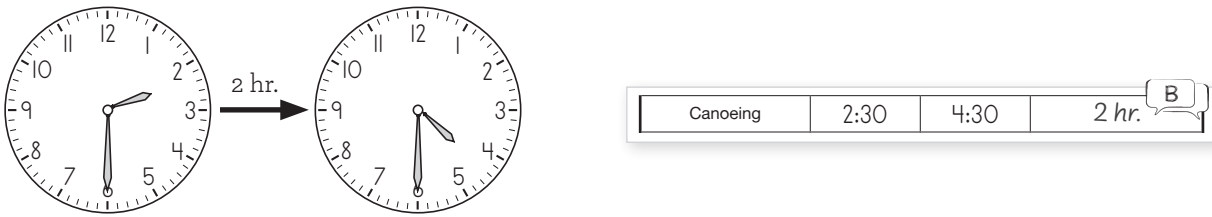
Activity	Start Time	End Time	Length of Activity
Swimming	1:00	4:00	3 hr.

You could also subtract to find the difference between the hours. What's 4 minus 1? 3. There are 3 hours between 1 o'clock and 4 o'clock.

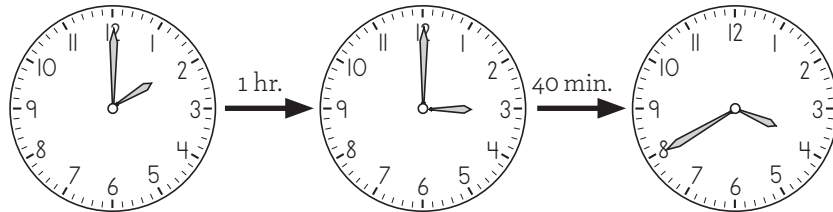
Subtracting to find the difference doesn't work if one time is a.m. and the other time is p.m. Your child will learn how to calculate times that involve a.m. or p.m. in Lessons 14.6 and 14.7.

Use the following questions to guide your child as she finds the length of each activity in the chart. Use a clock to model the questions.

- For canoeing: **2:30 and 4:30 have the same minutes, so they must be a whole number of hours apart.** Set the clock to 2:30 and have your child turn the clock's hands until they reach 4:30. **How many hours pass from 2:30 to 4:30?** *2.*

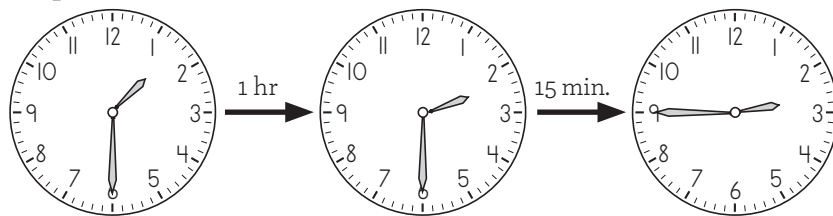


- For archery: **Archery goes from 2:00 to 3:40. How many hours pass from 2:00 to 3:00? 1 hour. How many minutes pass from 3:00 to 3:40? 40 minutes. So, 1 hour and 40 minutes pass from 2:00 to 3:40.**



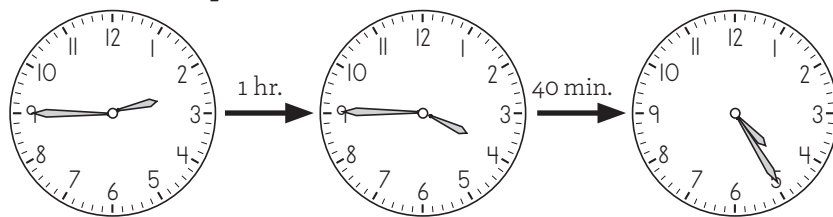
Archery	2:00	3:40	1 hr. 40 min.
---------	------	------	---------------

- For crafts: **Crafts are available from 1:30 to 2:45. How many hours pass from 1:30 to 2:30? 1 hour. How many minutes pass from 2:30 to 2:45? 15 minutes. So, 1 hour and 15 minutes pass from 1:30 to 2:45.**



Crafts	1:30	2:45	1 hr. 15 min.
--------	------	------	---------------

- For rock climbing: **Rock climbing is open from 2:45 to 4:25. How many hours pass from 2:45 to 3:45? 1 hour. How many minutes pass from 3:45 to 4:25? 40 minutes. So, 1 hour and 40 minutes pass from 2:45 to 4:25.**



Rock Climbing	2:45	4:25	1 hr. 40 min.
---------------	------	------	---------------

Independent Practice and Review

Have your child complete the Lesson 14.5 Practice and Review workbook pages. Your child may model the problems on a real clock as needed.

Scope and Sequence

Unit	Objectives
Unit 1 Review Addition and Subtraction	<ul style="list-style-type: none"> • Round two-digit numbers to the nearest ten • Compare numbers and addition and subtraction expressions with the $<$, $>$, and $=$ signs • Find missing numbers in addition and subtraction equations • Solve one- and two-step addition and subtraction word problems • Review adding and subtracting two-digit numbers with the addition and subtraction algorithms • Review bar graphs
Unit 2 Multiplication, Part 1	<ul style="list-style-type: none"> • Write multiplication equations with the \times sign for equal groups and arrays • Understand that you can multiply numbers in any order • Find answers for the $\times 1$, $\times 2$, $\times 5$, and $\times 10$ facts • Understand that any number times zero equals zero • Solve simple multiplication word problems
Unit 3 Mental Math and Word Problems	<ul style="list-style-type: none"> • Find the value of groups of tens and mentally add tens • Add up to identify missing addends and make change • Review strategies for mentally adding and subtracting one- and two-digit numbers • Mentally find differences between close numbers by adding up • Solve two-step word problems
Unit 4 Multiplication, Part 2	<ul style="list-style-type: none"> • Find answers for the $\times 3$ and $\times 4$ facts • Mentally multiply two-digit numbers by 2 (for example, 2×36) • Use multiplication to interpret pictographs
Unit 5 Numbers to 1,000	<ul style="list-style-type: none"> • Round three-digit numbers to the nearest hundred • Mentally add up to find missing addends to 1,000 or the next hundred • Use place-value thinking to add and subtract groups of tens (for example, $670 + 40$ or $510 - 30$) • Use the addition and subtraction algorithms to add and subtract three-digit numbers • Use estimation to check whether answers are reasonable • Solve mental multiplication problems that involve groups of 10 (for example, 4×30 or 17×10)
Unit 6 Fractions	<ul style="list-style-type: none"> • Read and write fractions to match pictures and hands-on materials • Identify the numerator and denominator in fractions and understand what each number means • Add and subtract fractions with the same denominator • Use pictures and hands-on materials to find equivalent fractions, including fractions equal to $\frac{1}{2}$ or 1 whole • Compare fractions by reasoning about the numerator and denominator or by comparing the fractions to $\frac{1}{2}$ • Write mixed numbers to match pictures or hands-on materials

Unit 7 Money	<ul style="list-style-type: none">• Round prices to the nearest dollar• Convert dollars to cents, and convert cents to dollars• Add up to make change with dollars and cents• Solve mental addition and subtraction problems with money• Use the addition and subtraction algorithms to add and subtract dollars and cents
Unit 8 Multiplication, Part 3	<ul style="list-style-type: none">• Find answers for the $\times 6$, $\times 7$, $\times 8$, and $\times 9$ facts• Multiply and add to find the total of equal groups and extra objects• Multiply 6, 7, 8, and 9 by multiples of 10 (for example, 9×70 or 6×60)• Multiply to convert weeks to days• Solve two-step multiplication word problems
Unit 9 Length, Perimeter, and Area	<ul style="list-style-type: none">• Review metric and U.S. customary units for measuring length• Measure length to the nearest quarter-inch or half-inch and write lengths with mixed numbers• Understand that perimeter is the distance around the edge of a shape• Measure to find an object's perimeter• Add the lengths of an object's sides to find its perimeter• Understand that area is the amount of space that a shape covers• Multiply length times width to find the area of rectangles• Split shapes into rectangular parts and add or subtract the areas of the parts to find total area• Solve perimeter and area word problems
Unit 10 Division, Part 1	<ul style="list-style-type: none">• Write division equations with the \div sign to match two different types of division situations• Understand how to use multiplication to find answers to division problems• Find answers for the $\div 2$, $\div 5$, and $\div 10$ facts• Solve simple division word problems• Solve division problems with remainders
Unit 11 Numbers to 10,000	<ul style="list-style-type: none">• Read, write, and compare numbers to 10,000• Understand place value in four-digit numbers and write four-digit numbers in expanded form• Round to the nearest thousand• Use place-value thinking to mentally add and subtract groups of hundreds (for example, $6,700 + 400$ or $5,100 - 300$)• Use the addition and subtraction algorithms to add and subtract four-digit numbers• Subtract to find elapsed time between years

Unit 12 Division, Part 2	<ul style="list-style-type: none">• Find answers for the $\div 3$, $\div 4$, and $\div 6$ facts• Divide small numbers with the long division algorithm• Solve division word problems with remainders and interpret remainders in context
Unit 13 Geometry	<ul style="list-style-type: none">• Identify right angles and tell whether other angles are larger or smaller than a right angle• Identify, describe, and draw squares, rectangles, and rhombuses• Use spatial skills to visualize flips, turns, and slides• Name three-dimensional shapes (cones, cubes, cylinders, rectangular prisms, triangular prisms, and pyramids) and identify faces, edges, and vertices
Unit 14 Elapsed Time	<ul style="list-style-type: none">• Review telling time to the minute• Describe times with <i>past</i> or <i>to</i>• Find times that are a certain number of minutes before or after a given time• Find the number of minutes that elapse between two times• Find times that are a certain number of hours and minutes before or after a given time• Find the number of hours and minutes that elapse between two times• Find how much time has elapsed before or after midnight or noon• Solve elapsed time word problems
Unit 15 Division, Part 3	<ul style="list-style-type: none">• Find answers for the $\div 7$, $\div 8$, and $\div 9$ facts• Divide by 7 to convert days to weeks• Use division to solve perimeter and area problems
Unit 16 Weight and Capacity	<ul style="list-style-type: none">• Understand the approximate size of an ounce, pound, gram, and kilogram• Estimate weight with ounces, pounds, grams, and kilograms• Understand the approximate size of a cup, pint, quart, gallon, milliliter, and liter• Estimate and measure capacity with cups and milliliters• Read scales and beakers• Solve weight and capacity word problems

Materials List

What You'll Need in Your Math Kit

You'll use the following materials regularly in *Third Grade Math with Confidence*. Stash them in a box or basket and always keep them ready for your next lesson. (See page 9 in the Introduction for more detailed descriptions of each item.)

- Base-ten blocks (at least 50 units, 20 rods, 10 flats, and 1 large cube)
- 50 small counters
- Coins (20 pennies, 20 nickels, 20 dimes, 10 quarters)
- Play money (20 each of one-dollar bills, ten-dollar bills, and hundred-dollar bills; 10 each of five-dollar bills, twenty-dollar bills, and thousand-dollar bills)
- Clock with hands
- Fraction circles
- 1-foot (or 30-centimeter) ruler, labeled with both inches and centimeters
- 2 packs of playing cards and 2 regular, six-sided dice
- Blank paper
- Pencils
- 1 page protector and 1 dry-erase marker
- Binder with about 10 page protectors, optional

Other Supplies

Besides your Math Kit, you'll also need the following household items. You'll only need most of them once or twice, so you don't need to gather them ahead of time or store them separately. Check the unit overviews for the specific household items you'll need for each unit.

Items marked with an asterisk are needed for the optional enrichment lessons at the end of each unit.

- 6 toothpicks
- White crayon
- Marker or highlighter
- Markers, crayons, or colored pencils
- Small slips of paper
- 5-6 small boxes or bowls
- *24 small snack items, such as raisins, pieces of cereal, or small candies
- Paper clip
- *3 clear jars or bowls
- *3 sets of small objects (such as crackers, blocks, or cotton balls) with 50-150 objects in each set
- Measuring cups (1/4-cup, 1/3-cup, 1/2-cup, and 1-cup)
- Water
- *Ingredients for pumpkin bread or another recipe. See the recipe in Lesson 6.11 (page 204) for suggested ingredients.
- 3 small office items (such as a pencil, eraser, and ruler)
- *Toy catalog or access to a website with items your child would like to buy
- Calendar, optional
- *Varies, depending on which activity you choose. See Lesson 8.9 (page 266) for options.
- Scissors
- Tape
- 3 books of varying sizes
- Masking tape or yarn

- Yardstick and meterstick, optional
- Map of your town (either paper or on a map app), optional
- *Tape measure
- *20-25 small snacks, such as blueberries, chocolate chips, or pieces of cereal (optional)
- 6 dice
- *Map app
- *Contact paper (self-adhesive, clear vinyl)
- *Black construction paper
- *Tissue paper in assorted colors
- *Paper plate
- *Pencil
- *Tape, optional
- Yarn
- Object that weighs about 1 ounce, such as a slice of bread, AA battery, or a stack of 5 quarters
- Object that weighs about 1 pound, such as a loaf of bread, can of vegetables, or box of pasta
- 5 pantry items of varying weights, with tape or a sticky note covering the items' labeled weights
- Kitchen scale or postal scale that measures in pounds and ounces, optional
- 5 small household objects, optional
- Object that weighs about 1 gram, such as a paper clip, 1-dollar bill, or thumbtack
- Object that weighs about 1 kilogram, such as a pair of adult shoes, a pineapple, or your child's student workbook
- Kitchen scale or postal scale that measures in kilograms and grams, optional
- 1-pint and 1-quart measuring cups, optional
- 5 containers of varying capacities
- Eyedropper, optional
- 1-liter container (such as a large water bottle or measuring cup), optional
- Variety of food and personal care items, with capacity labeled in milliliters
- *Honey
- *Blue dishwashing soap
- *Vegetable oil
- *Rubbing alcohol (surgical spirit)
- *Food coloring
- *Tall, clear glass or glass jar
- *Measuring cup that measures in milliliters
- *Small bowls and spoons for mixing

Guide to the Blackline Masters

Digital Copies of Blackline Masters

Prefer to print the Blackline Masters rather than copy them from the book? **Download digital copies of all Math with Confidence Blackline Masters at welltrainedmind.com/mwc.**



Frequently-Used Blackline Masters

You'll use these pages often throughout the book. Some are for modeling important concepts, while others provide helpful reference information. Place these pages in page protectors in a binder so they're always available. Encourage your child to refer to them as needed as he completes the Practice and Review pages.

- Memory Work (Blackline Master 1)
- How to Read Word Problems (Blackline Master 2)
- Place-Value Chart (Blackline Master 3)
- Addition and Subtraction Algorithms (Blackline Master 4)
- Dot Array and L-cover (Blackline Master 5)
- Multiplication Strategies (Blackline Master 6)

Short-Term-Use Blackline Masters

These pages give your child hands-on practice with measurement and geometry concepts. You will use them for only a few lessons, and you do not need to save these Blackline Masters after you finish the corresponding unit.

- Paper Ruler (Blackline Master 8), used in Unit 9 only
- Quadrilateral Cards (Blackline Master 9), used in Unit 13 only
- Pentominoes (Blackline Master 10) used in Unit 13 only
- Nets (Blackline Master 11), used in Unit 13 only

Optional Blackline Masters

These blackline masters are optional. If you have real fraction circles, base-ten blocks, and play money, you do not need Blackline Masters 7, 12, and 13. The Subtraction Climb and Slide page is an optional game for practicing the subtraction facts. See the Unit 2 Checkpoint (page 79) for details on whether or not you need it.

- *Fraction Circles (Blackline Master 7)
- *Base-Ten Blocks (Blackline Master 12)
- *Play Money (Blackline Master 13)
- *Subtraction Climb and Slide (Blackline Master 14)

Memory Work (Blackline Master 1)

$$3 + 4 = 7$$

↑ ↑ ↑
addends sum

$$7 - 4 = 3$$

 ↑
difference

$$5 < 6$$

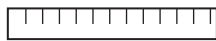
 ↑
less-than sign

$$6 > 5$$

 ↑
greater-than sign

Odd numbers have
1, 3, 5, 7, or 9
in the ones-place.

Even numbers have
0, 2, 4, 6, or 8
in the ones-place.



1 foot = 12 inches



1 yard = 3 feet

1 yard = 36 inches



1 meter = 100 centimeters

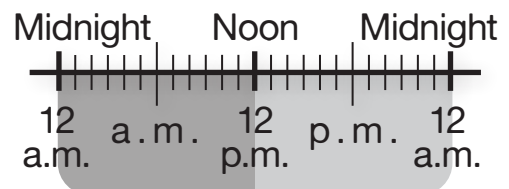
1 year = 12 months

1 week = 7 days

1 day = 24 hours

1 hour = 60 minutes

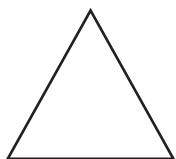
1 minute = 60 seconds



Half-hour
30 minutes



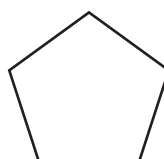
Quarter-hour
15 minutes



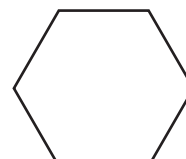
Triangle
3 sides



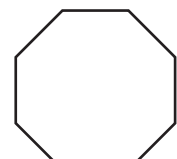
Quadrilateral
4 sides



Pentagon
5 sides



Hexagon
6 sides



Octagon
8 sides

$$3 \times 4 = 12$$

↑ ↑ ↑
 factors product

$$9 \div 4 = 2 \text{ R } 1$$

↑ ↑ ↑ ↑
 dividend divisor quotient remainder

1 kilometer = 1,000 meters

1 kilogram = 1,000 grams

1 liter = 1,000 milliliters

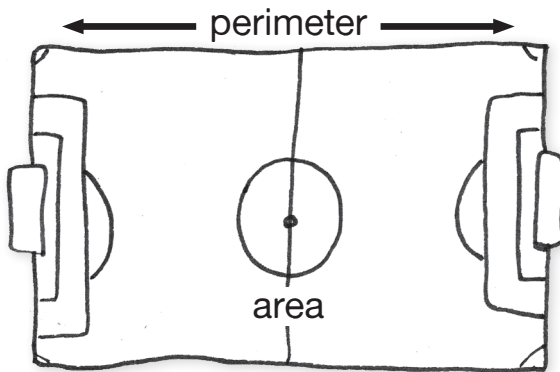
1 pound = 16 ounces

1 pint = 2 cups

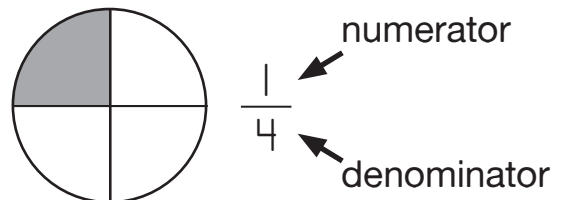
1 quart = 2 pints

1 gallon = 4 quarts

Perimeter measures the distance around the outside edge of a shape.



Area measures the amount of space that a shape covers.



$$\frac{1}{2} = \frac{2}{4}$$

equivalent fractions

$$2 \frac{1}{3}$$

mixed number



Rectangle
4 right angles



Square
4 right angles
4 equal sides



Rhombus
4 equal sides
2 pairs of parallel sides

How to Read Word Problems (Blackline Master 2)

1. Read the problem.
2. Identify the goal.
3. Read the problem again.
 - Read slowly and carefully.
 - Imagine what's happening.
 - Stop after each sentence to make sure you understand it.
4. Solve.

Place-Value Chart (Blackline Master 3)

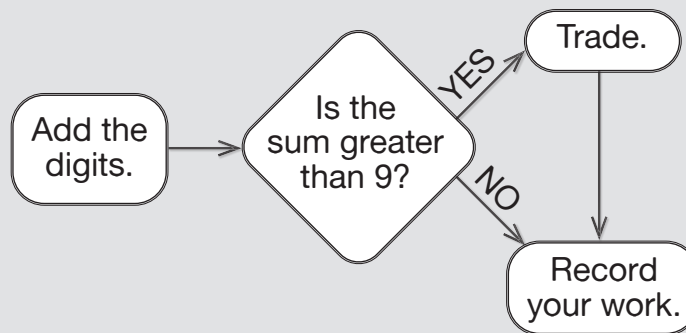
tens	ones

	thousands
	hundreds

Addition and Subtraction Algorithms (Blackline Master 4)

The Addition Algorithm

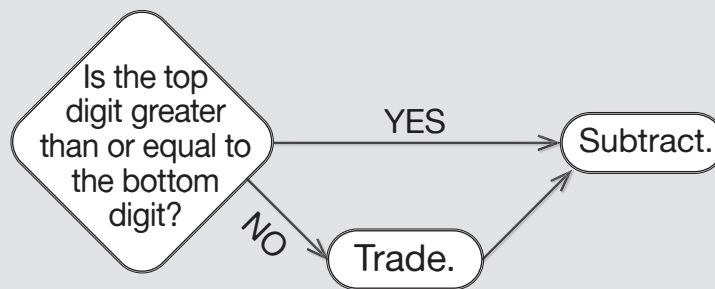
*** Start with the ones-place.



*** Follow the steps for all the places.

The Subtraction Algorithm

*** Start with the ones-place.



*** Follow the steps for all the places.

Directions: Cut on the dotted line. You will be left with a gray L.

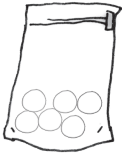

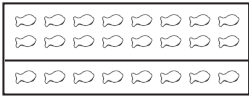
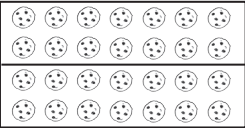
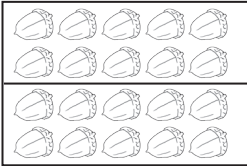
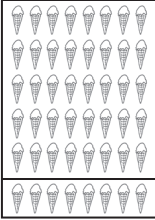
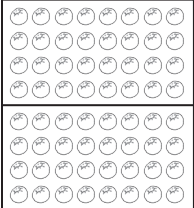
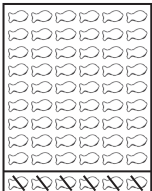
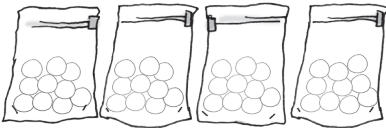


Multiplication Strategies (Blackline Master 6)

All facts Use the facts within the same table as stepping stones.

$5 \times 7 = 35$ $6 \times 7 = 42$ $7 \times 7 = 49$

$5 \times 7 = 35$
 $35 + 7 + 7 = 49$
 $7 \times 7 = 49$

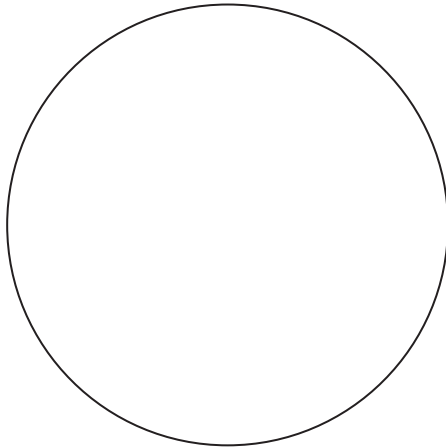
<p>1 Any number times 1 equals the number.</p>  <p>$1 \times 6 = 6$</p>	<p>2 Double the number.</p>  <p>Double 5 is 10. $2 \times 5 = 10$</p>	<p>3 Use the related $\times 2$ fact.</p>  <p>$2 \times 8 = 16$ $16 + 8 = 24$ $3 \times 8 = 24$</p>
<p>4 Double the related $\times 2$ fact.</p>  <p>$2 \times 7 = 14$ Double 14 is 28. $4 \times 7 = 28$</p>	<p>5 Make groups of 10.</p>  <p>4 groups of 5 equal 2 tens. $4 \times 5 = 20$</p>	<p>6 Use the related $\times 5$ fact.</p>  <p>$5 \times 8 = 40$ $40 + 8 = 48$ $6 \times 8 = 48$</p>
<p>8 Double the related $\times 4$ fact.</p>  <p>$4 \times 8 = 32$ Double 32 is 64. $8 \times 8 = 64$</p>	<p>9 Use the related $\times 10$ fact.</p>  <p>$10 \times 6 = 60$ $60 - 6 = 54$ $9 \times 6 = 54$</p>	<p>10 Use place-value thinking.</p>  <p>4 tens = 40 $4 \times 10 = 40$</p>

Fraction Circles (Blackline Master 7)

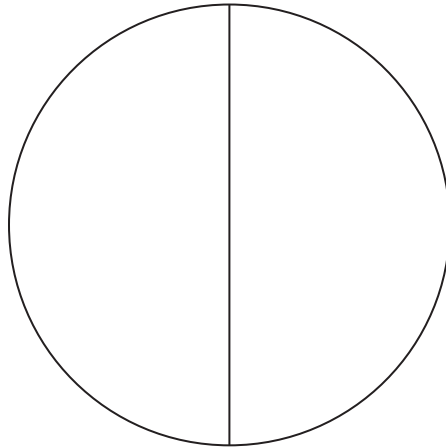
You do not need these if you have plastic or wooden fraction circles.

Directions: Copy this page onto sturdy paper. Color each circle the color listed next to it. Then, cut along the lines.

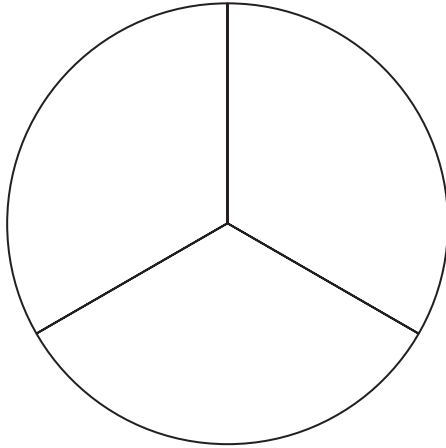
red



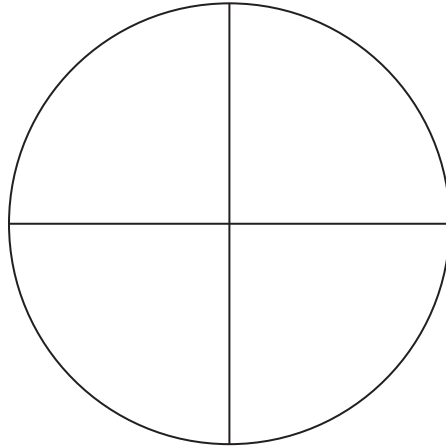
orange



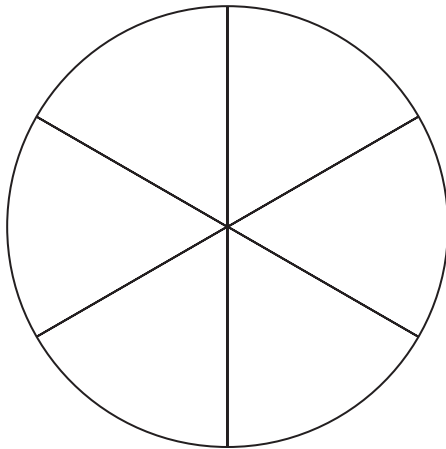
yellow



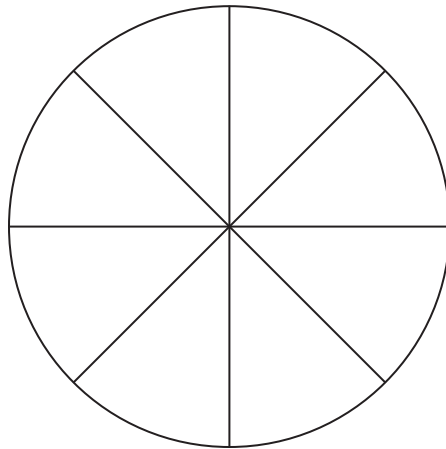
green



blue



purple

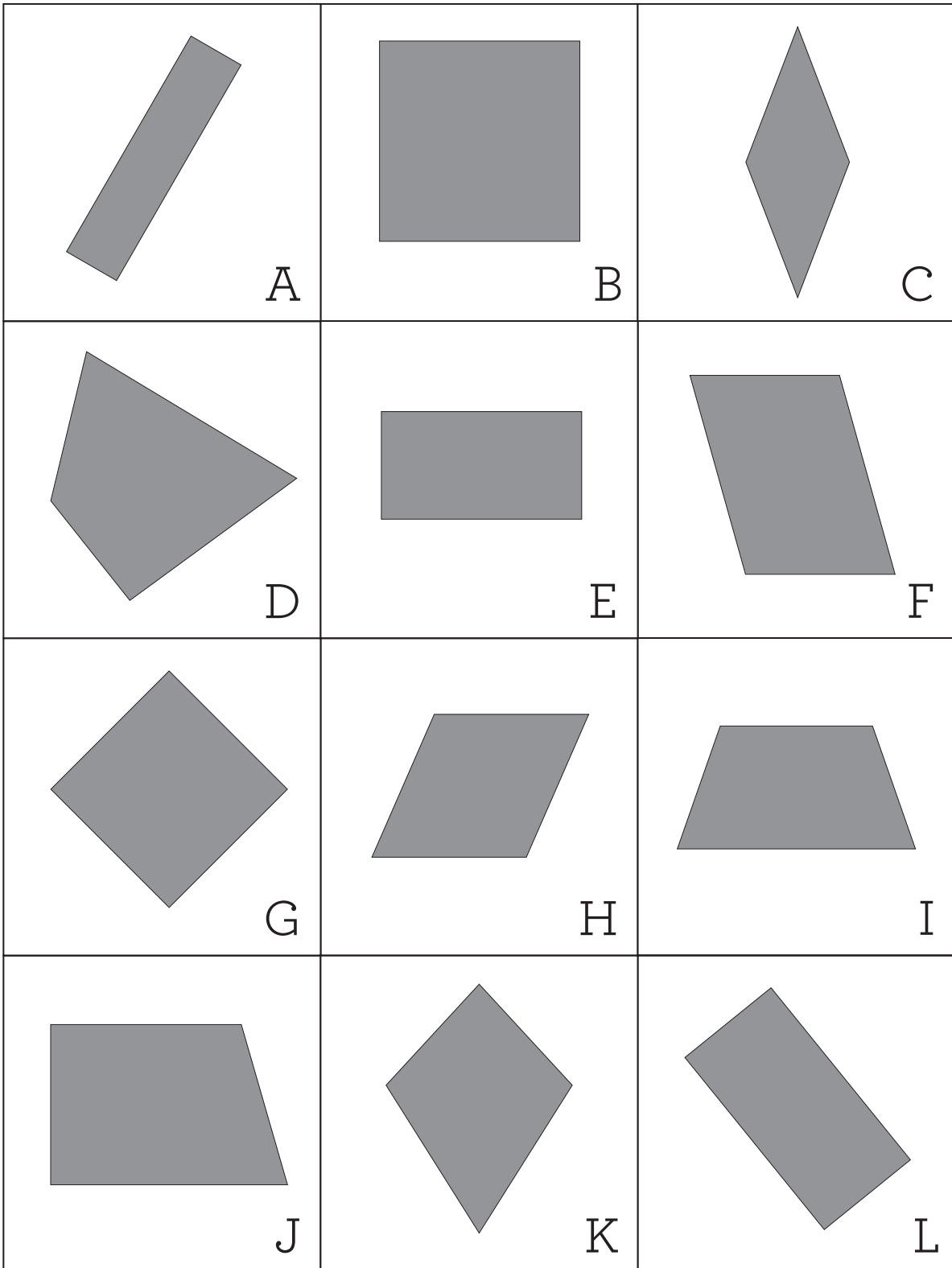


Paper Ruler (Blackline Master 8)

Directions: Cut out the paper ruler on the solid line.

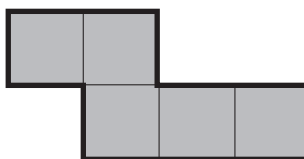
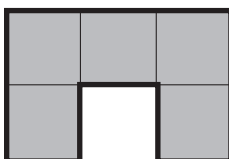
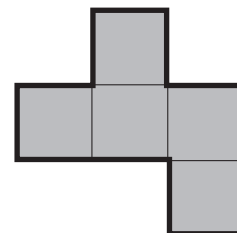
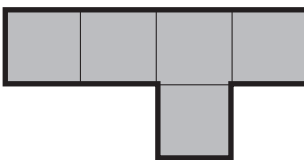
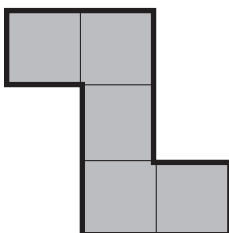
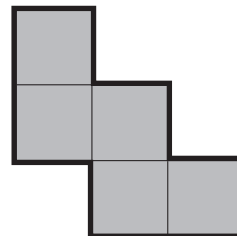
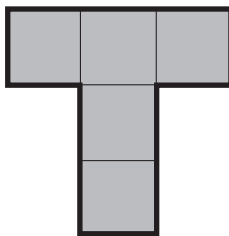
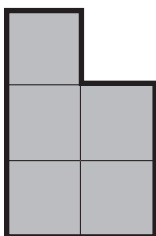
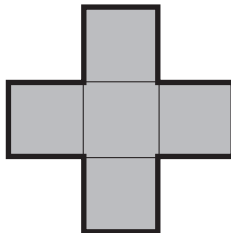
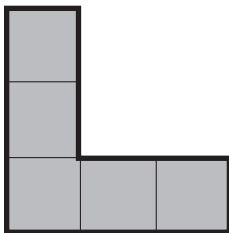


Quadrilateral Cards (Blackline Master 9)



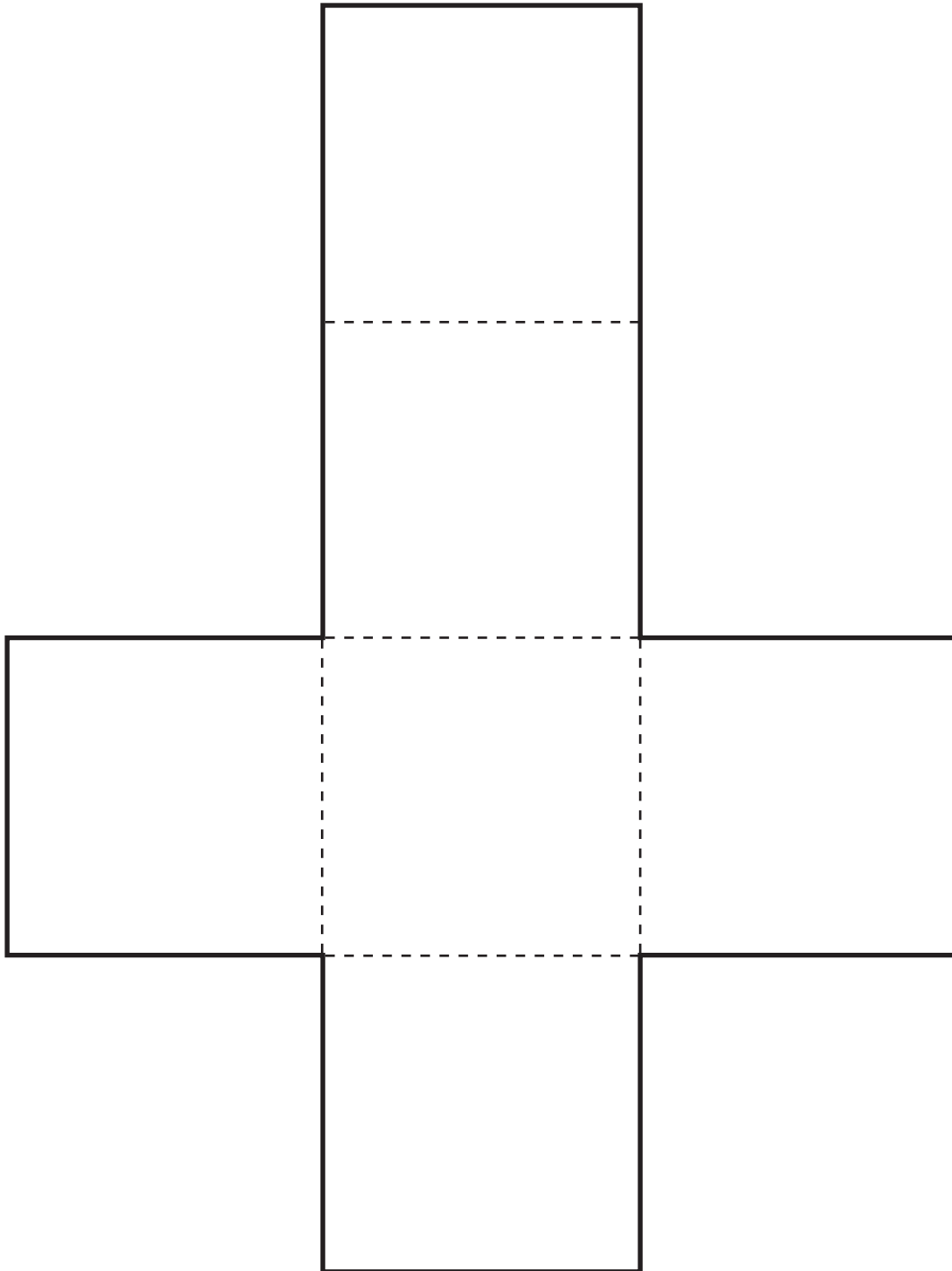
Pentominoes (Blackline Master 10)

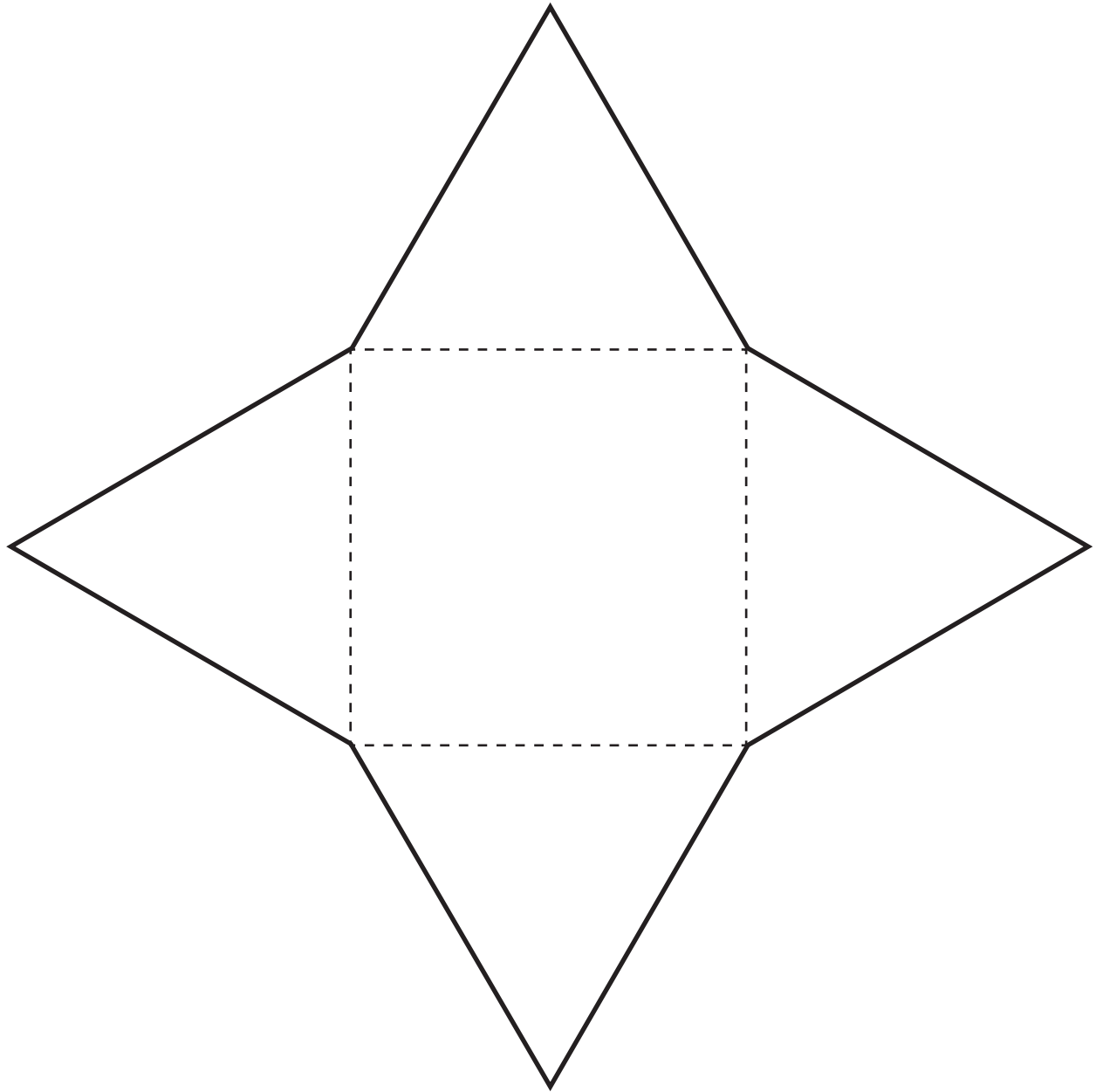
Directions: Copy this page onto sturdy paper. Cut out the pentominoes on the heavy lines.

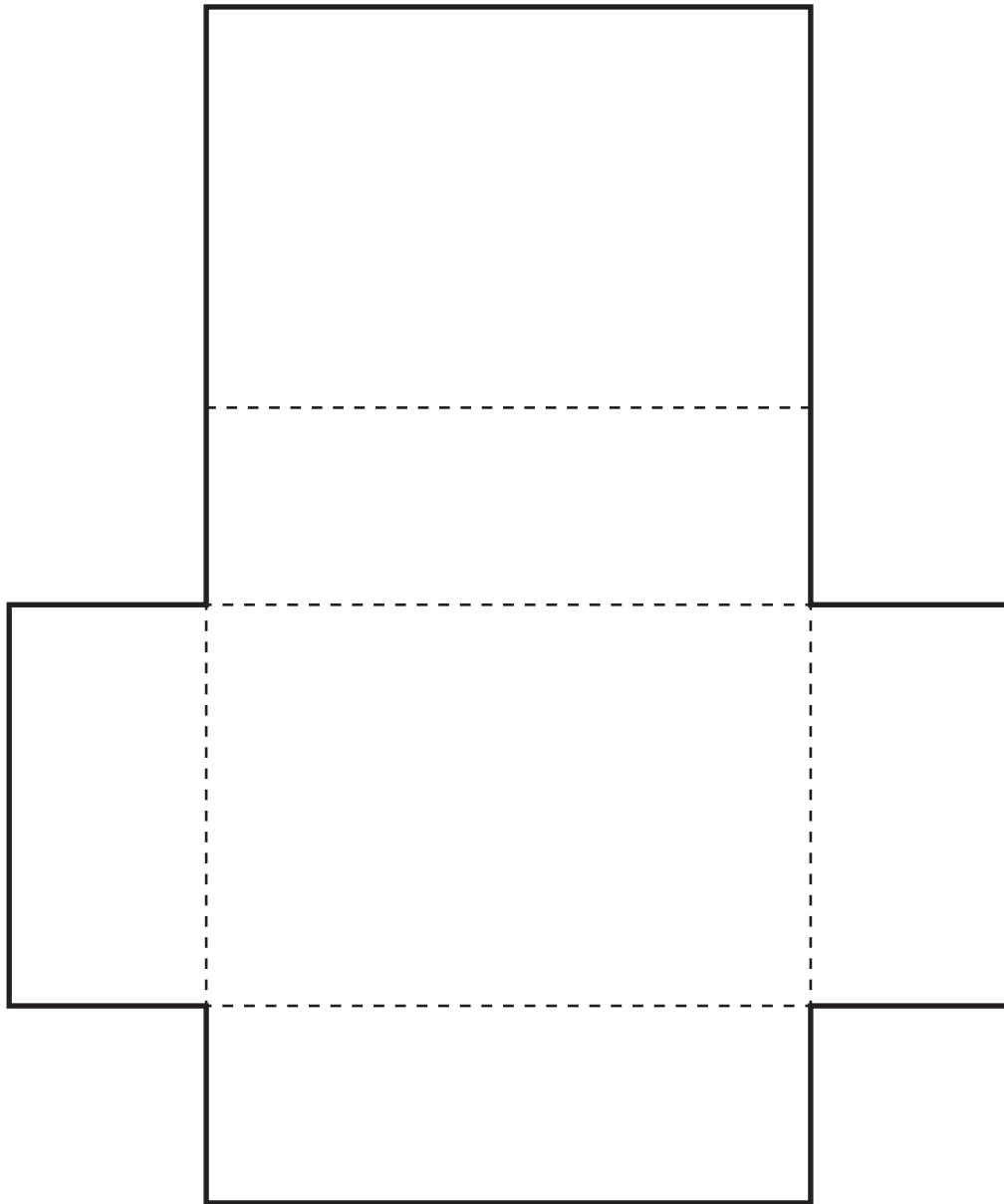


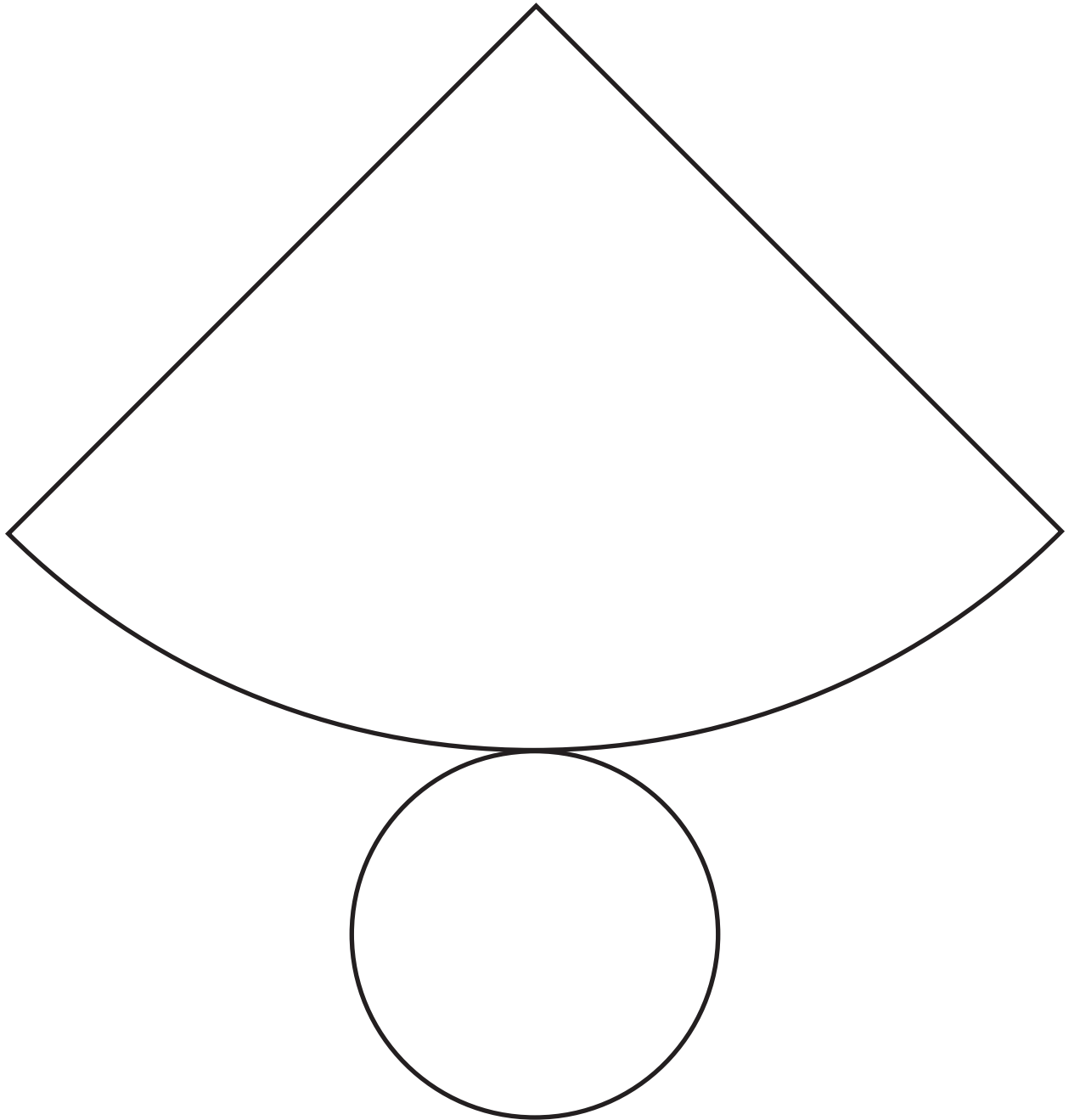
Nets (Blackline Master 11)

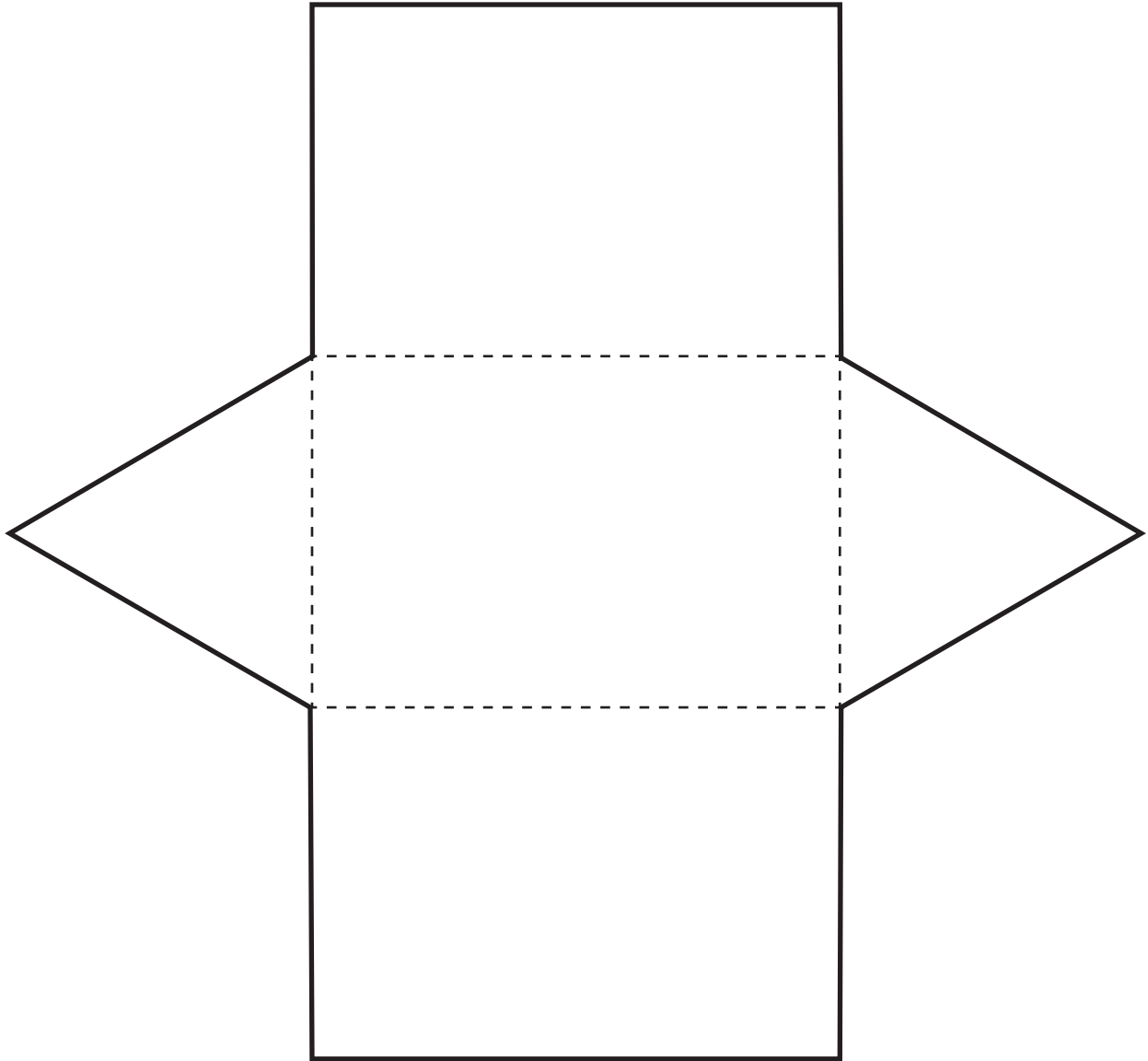
Directions: Copy these pages onto sturdy paper. Cut out along the solid lines.

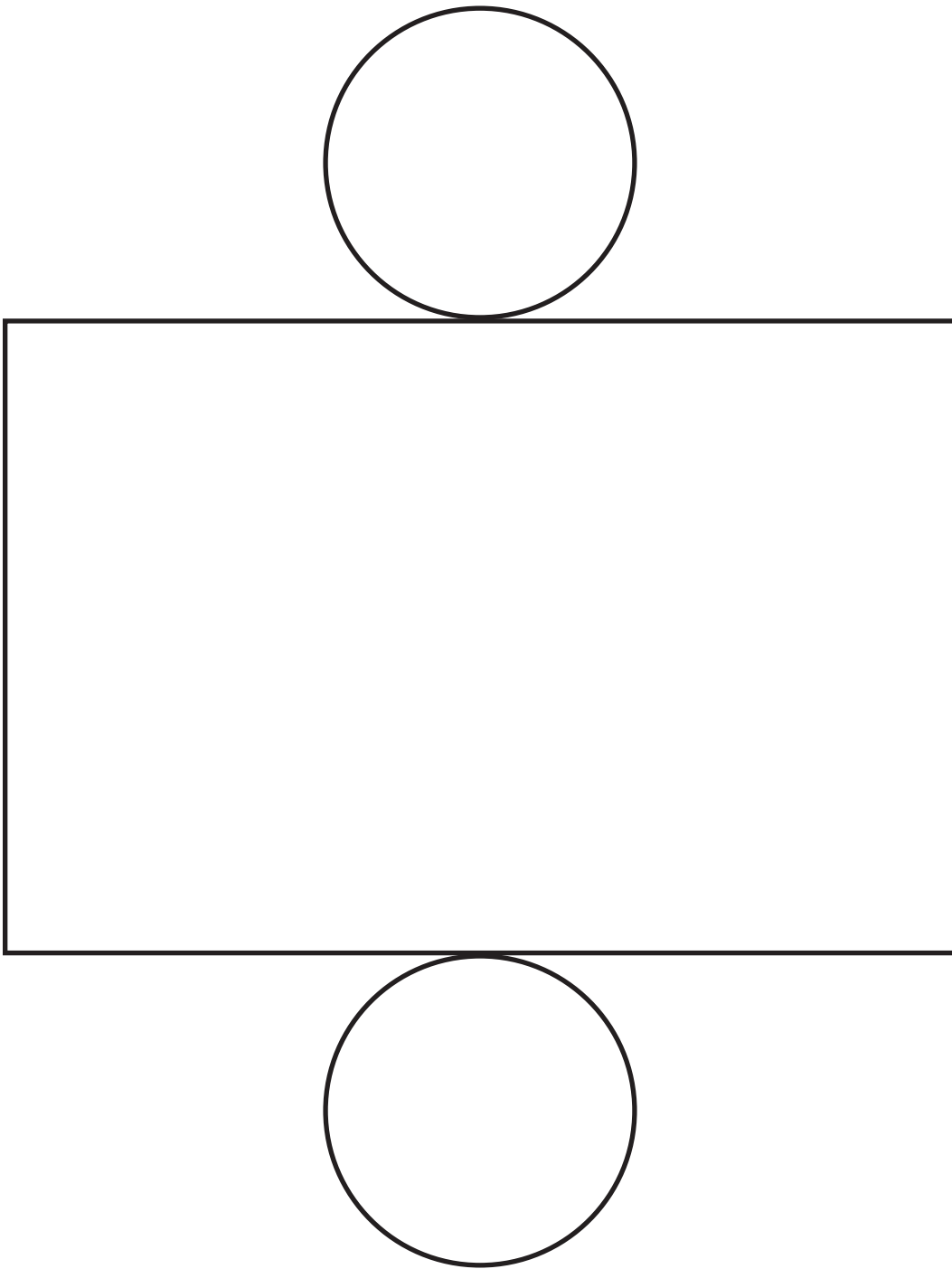








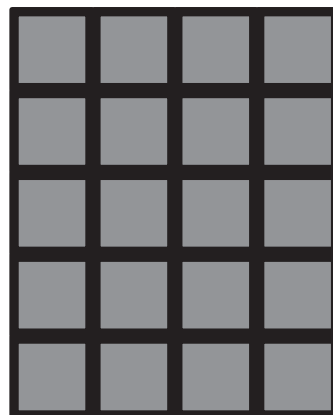
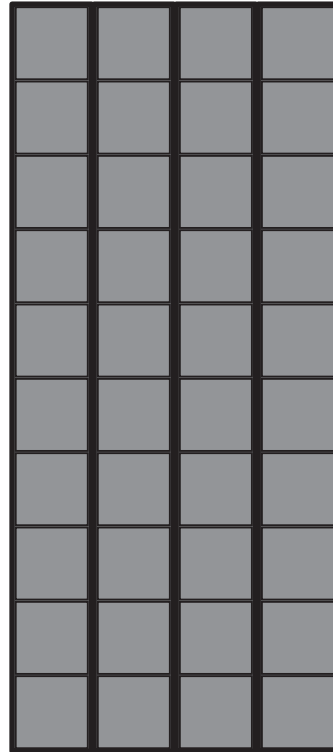
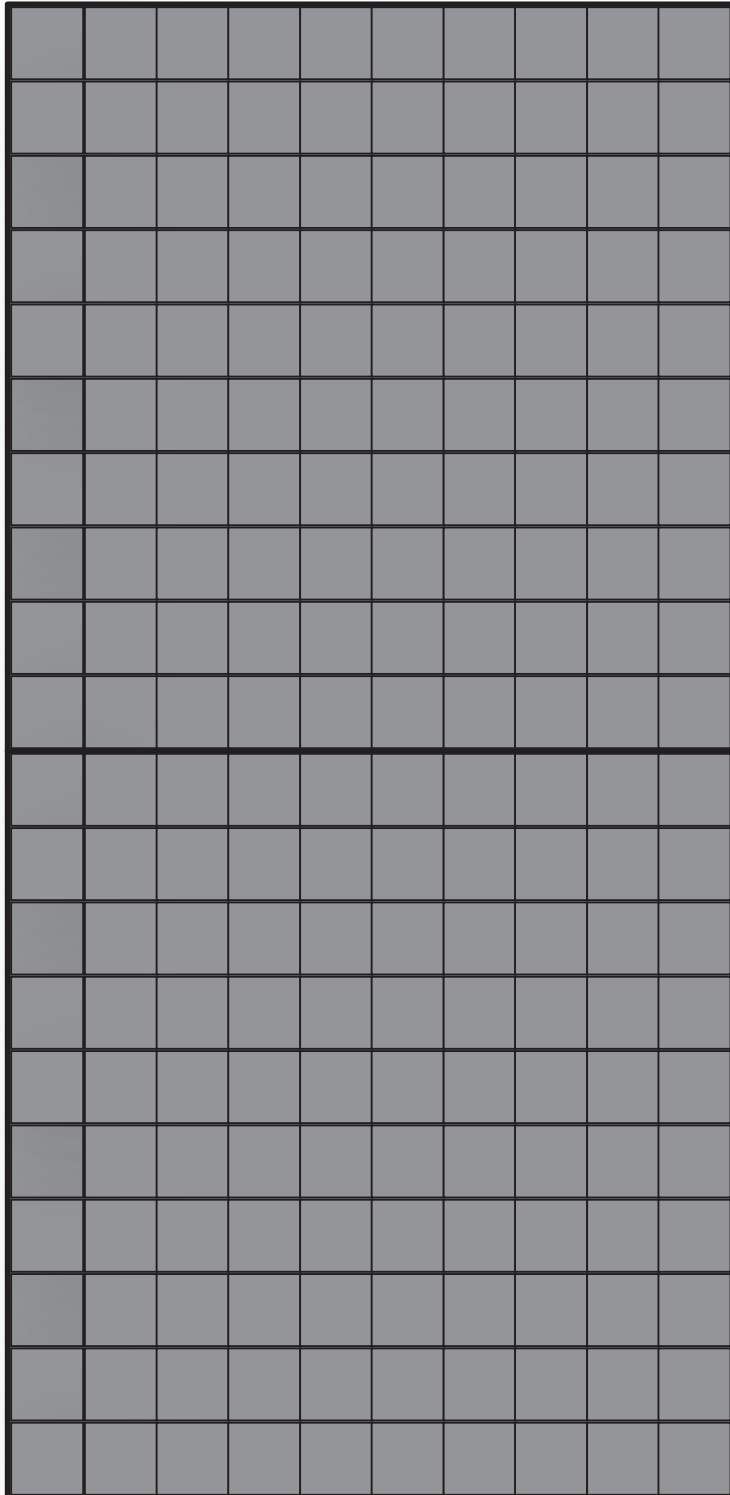




Base-Ten Blocks (Blackline Master 12)

You do not need these if you have real base-ten blocks.

Directions: Make 5 copies of this page on sturdy paper. Cut out the blocks on the dark lines.



Play Paper Bills for Families Outside the US (Blackline Master 13)

You do not need these if you have other play money, either from a toy cash register or board game.

Directions: Make 2 copies of this page on sturdy paper and cut out the paper bills.

<input type="radio"/> \$1 <input type="radio"/>	<input type="radio"/> \$1 <input type="radio"/>	<input type="radio"/> \$1 <input type="radio"/>	<input type="radio"/> \$1 <input type="radio"/>	<input type="radio"/> \$1 <input type="radio"/>
<input type="radio"/> \$5 <input type="radio"/>	<input type="radio"/> \$5 <input type="radio"/>	<input type="radio"/> \$5 <input type="radio"/>	<input type="radio"/> \$5 <input type="radio"/>	<input type="radio"/> \$5 <input type="radio"/>
<input type="radio"/> \$10 <input type="radio"/>	<input type="radio"/> \$10 <input type="radio"/>	<input type="radio"/> \$10 <input type="radio"/>	<input type="radio"/> \$10 <input type="radio"/>	<input type="radio"/> \$10 <input type="radio"/>
<input type="radio"/> \$20 <input type="radio"/>	<input type="radio"/> \$20 <input type="radio"/>	<input type="radio"/> \$20 <input type="radio"/>	<input type="radio"/> \$20 <input type="radio"/>	<input type="radio"/> \$20 <input type="radio"/>
<input type="radio"/> \$100 <input type="radio"/>	<input type="radio"/> \$100 <input type="radio"/>	<input type="radio"/> \$100 <input type="radio"/>	<input type="radio"/> \$100 <input type="radio"/>	<input type="radio"/> \$100 <input type="radio"/>
<input type="radio"/> \$1,000 <input type="radio"/>	<input type="radio"/> \$1,000 <input type="radio"/>	<input type="radio"/> \$1,000 <input type="radio"/>	<input type="radio"/> \$1,000 <input type="radio"/>	<input type="radio"/> \$1,000 <input type="radio"/>

Subtraction Climb and Slide (Blackline Master 14)

Use this game as needed to review subtraction facts.

Materials: 2 different-colored counters to use as game tokens; die

Object of the Game: Be the first player to reach the Finish square.

Each player chooses a counter to use as a game token and places it on the Start square.

On your turn, roll the die and advance your token the corresponding number of squares. Say the answer to the problem on your landing square.

If you land on a square at the bottom of a ladder, “climb” the ladder and place your game token on the square at the top of the ladder. If you land on a square at the top of a slide, slide down the slide and place your game token on the square at the bottom of the slide.

The first player to reach Finish wins the game.

