MULTIPLICATION FACTS THAT STICK

HELP YOUR CHILD MASTER THE MULTIPLICATION FACTS FOR GOOD IN JUST TEN WEEKS!

5X4: 20

8X 32

4 X 6 = 24

9 X 3 = 27

2 X 2 = 4

7 X 8 = 56

5 X 5 = 25

X7: 63

WELL-TRAINED MIND PRESS

BY KATE SNOW

MULTIPLICATION FACTS THAT STICK

Help Your Child Master the Multiplication Facts
for Good in Just Ten Weeks

KATE SNOW

TABLE OF CONTENTS

WEEK 1: ×1 AND ×2 FACTS   /   21

WEEK 2: ×3 FACTS   /   41

WEEK 3: ×4 FACTS   /   53

WEEK 4: ×10 FACTS / 61

WEEK 5: ×5 FACTS / 67

WEEK 6: ×6 FACTS / 75

WEEK 7: ×9 FACTS / 83

WEEK 8: ×7 FACTS   /   95

WEEK 9: ×8 FACTS   /   103

WEEK 10: REVIEW   /   111

GAME BOARDS   /   117

PRACTICE PAGES   /   197

ANSWER KEYS   /   399

PREFACE

When my family visited Rocky Mountain National Park last year, we spent an afternoon at the Alluvial Fan, a 42-acre pile of boulders that tumbled down the mountainside over two decades ago. My two children couldn't wait to try to scramble up this huge rock heap, but I was wary that the climb would be too difficult and tiring for six-year-old Elizabeth. She and I took off towards some of the smaller, easier-to-climb rocks. I figured she'd get worn out quickly, and that we'd turn back after a few minutes. Meanwhile, my husband and nine-year-old son eagerly headed straight up the larger rocks with high hopes of making it to the top.

Elizabeth and I started out tentatively on our climb, always looking for the easiest way possible. Instead of trying to climb directly up the intimidating boulder faces, we looked for small rocks that would gradually boost us up. Step by step, we zigzagged between walls of rock, slowly inching our way higher and higher. It began to drizzle, but we were having so much fun climbing that we didn't even care. After 20 minutes of steady progress, we emerged out of a rocky crevice and discovered that we'd made it to the top of the pile.

Elizabeth beamed with pride as we backtracked down through the rocks. As we descended the final steps, we spotted my husband and son back at the parking lot. It turned out that the sheer rock faces had made them so tired and discouraged that they'd given up and turned back in less than five minutes. Trying to conquer the massive rock pile the hard way had kept them from accomplishing their goal.

In my many years as a math teacher, homeschool parent, tutor, and math curriculum writer, I've found that mastering the multiplication facts can feel as daunting as climbing a pile of boulders. With 100 facts to learn, it's no wonder that parents and children feel like they are facing a mountain of multiplication.

But don't fear! With this book, your child will work steadily and confidently toward mastering the multiplication facts, with lots of success along the way. She will learn the multiplication facts in a logical order, so that she can use easier facts as stepping stones to more difficult facts. And, for each set of facts, she'll play fun games that gently build in difficulty, so that mastering the multiplication facts feels as simple as just taking the

next step up—not as difficult as trying to climb straight up a sheer rock face. By the end of the book, your child will have mastered all 100 multiplication facts and feel the glow of triumph that comes from conquering a challenge.

Over the years, I've met so many parents who want to help their children master these important math foundations but just aren't sure how to do so effectively. That's why I've written this book. It will guide you step by step as you help your child master the multiplication facts, once and for all, so that the multiplication facts truly stick.

INTRODUCTION

What makes this approach unique?

~~Practice all the multiplication facts at once.~~

Target one small group of multiplication facts at a time.

Instead of overwhelming your child with all 100 multiplication facts from 1×1 up to 10×10, this program teaches children just one times table at a time. (A times table is simply one set of multiplication facts. For example, the ×4 table is 1×4, 2×4, and so on up to 10×4.)

```
 1 × 4 = 4
 2 × 4 = 8
 3 × 4 = 12
 4 × 4 = 16
 5 × 4 = 20
 6 × 4 = 24
 7 × 4 = 28
 8 × 4 = 32
 9 × 4 = 36
10 × 4 = 40
```

The ×4 times table. Your child will focus on just one times table per week.

Your child will start with the easiest times tables and work his way up to the most difficult ones. Each time he learns a new table, you'll teach him how to use what he's already learned to help him master the new facts. Simple scripted lesson plans are included for each week to guide you every step of the way.

~~Memorize answers.~~

Understand the meaning of the multiplication facts and use easier facts as "stepping stones" to harder facts.

Memorizing answers by rote is time consuming, tedious, and often frustrating. Fortunately, there's a better way!

For example, take 6 × 8. You could have your child learn it by reciting it over and over, copying it out many times, or making up a cute story to remember it. Maybe 6 "ate" 48?

All of this repetition *might* implant 6 × 8 in your child's memory for good. But once he starts to work on 7 × 7 and 7 × 8, will he still remember 6 × 8? And, even if he does remember 6 × 8 permanently, he'll still have 99 more multiplication facts to memorize.

So, what's a better approach? First, children need to understand concretely what each multiplication problem means so that the numbers aren't just sequences of abstract symbols. In our example, 6 × 8 means "six groups of eight." One easy way to make the idea of "six groups of eight" less abstract is to use a simple grid of circles called a dot array.

×	1	2	3	4	5	6	7	8
1	○	○	○	○	○	○	○	○
2	○	○	○	○	○	○	○	○
3	○	○	○	○	○	○	○	○
4	○	○	○	○	○	○	○	○
5	○	○	○	○	○	○	○	○
6	○	○	○	○	○	○	○	○

6 × 8 modeled on a dot array. Each of the six rows has eight dots, so there are six groups of eight.

Second, once your child understands concretely what each multiplication fact means, the dot array will help him use the facts he's already learned to master the harder facts. With rock climbing, it's a lot easier to climb up small rocks gradually rather than try to scale a sheer rock face. With multiplication facts, it's much easier to use facts you've already learned as stepping stones for mastering the harder facts than it may be to memorize them by rote.

For example, even though 6×8 is often one of the toughest facts to memorize, most children find it quite easy when they use 5×8 as a stepping stone. (5×8 makes a nice stepping stone, since children's familiarity with fives from their early years of arithmetic usually make the ×5 facts easy to learn.)

The dot array will help your child visualize how to use 5×8 as a stepping stone to 6×8:

$5 \times 8 = 40$. 6×8 is just one more group of eight than 5×8. So, you can just add $40 + 8$ to find the answer: $6 \times 8 = 48$.

This combination of the dot array and stepping-stone facts will help your child gradually master all the multiplication facts for good, without having to memorize each fact individually.

~~Drill the multiplication facts over and over.~~

Teach multiplication facts that stick!

Instead of drilling the multiplication facts over and over so that he is exposed to the right answer enough times to memorize it, your child will practice using stepping-stone facts until the answers become automatic. With consistent practice at finding the answers to multiplication problems, your child will get faster and faster—and before long, he will "just know" the answers and have them fully mastered.

HOW TO USE THIS BOOK

Math fact sequence

American math curricula typically teach the math facts as follows:

- Addition facts: 1st grade
- Subtraction facts: 2nd grade
- Multiplication facts: 3rd grade
- Division facts: 4th grade.

No matter what grade your child is in, it's essential that she learn the math facts in this order, because each set of facts builds logically on the previous one. If your child has not yet learned the addition or subtraction facts, have her first work through *Addition Facts That Stick* or *Subtraction Facts That Stick* before you return to this book. Then, once she finishes this book, she'll be ready to move on to *Division Facts That Stick.*

Prerequisite skills

This book is designed for children who have already studied multiplication in a math program, but have not yet memorized the multiplication facts. It is *not* meant to be your child's first exposure to multiplication. Children need a thorough grasp of what multiplication means (for example, that 3 × 8 means "three groups of eight") before they're ready to memorize the facts. You'll review this meaning of multiplication in Week 1, but this brief refresher is not meant to be a substitute for more in-depth study.

While it's fine to use this book to introduce your younger child to the multiplication facts, don't expect thorough mastery of the multiplication facts until your child is *at least* eight years old. Most children's brains aren't developmentally mature enough to memorize all the multiplication facts until this age.

In addition to understanding the meaning of multiplication, your child also needs the following skills to be successful at learning the multiplication facts:

- Understanding the concept of place value. (For example, that five tens and three ones equal 53.)
- Knowing the subtraction facts with a minuend of 10 (10 – 1, 10 – 2, etc. up to 10 – 9).

Weekly overview

You'll teach your child just one times table each week. (The only exception is Week 1, when your child will learn both the ×1 and ×2 tables.) You'll use direct teaching, recitation, games, and written Practice Pages to help your child master the times table each week.
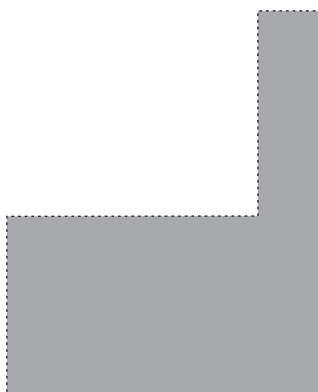
While the goal is for your child to learn one times table per week, please don't feel that you must stick to this exact schedule. All children are unique and learn at their own speed, and you are free to adjust the pacing and activities to best suit your child's needs. (For example, if your child has trouble writing, the Practice Pages can also be done orally—see below.)

Direct teaching

On the first day of each week, you'll teach a short, scripted lesson to introduce the multiplication facts for the week. (During Week 1, you will also review multiplication fundamentals with a quick lesson each day.)

In the lessons, you'll use a ten-by-ten dot array to model multiplication problems, along with an L-shaped paper cover. A dot array is simply a grid of circles that will help your child visualize what the problems mean.

By sliding the L-cover across the dot array, you can model any multiplication problem from 1×1 up to 10×10. Each lesson will show you how to use the dot array and L-cover to teach your child the multiplication facts for the week. (You can find your own dot array and L-cover on pages 119 and 121. You'll want to pull both pages out of the book for you and your child to use together.)

×	1	2	3	4	5	6	7
1	○	○	○	○	○	○	○
2	○	○	○	○	○	○	○
3	○	○	○	○	○	○	○

An example of how you'll use the dot array and L-cover to show 3×7.

In each lesson, you'll also teach your child how to use the multiplication facts she already knows to help her master new facts.

Recitation

On days 2 through 5, your child will recite the week's times table as a warm-up exercise. Reciting the times tables may seem old-fashioned, but it has several time-tested benefits. First, saying information aloud helps to cement it in your child's memory. Second, reciting each table in order helps your child understand how the facts in the table are related. For example, reciting "1×7 is 7. 2×7 is 14. 3×7 is 21 . . ." reminds your child that each new fact in the ×7 table is seven more than the previous fact. So, she can add seven to each previous fact to help her remember the next one, because the facts in the table add a new group of seven each time.

At the beginning of the week, your child will recite while sliding the L-cover over the dot array. Looking at a visual model of each fact as she recites will give her a visual reminder of how each fact in the table is related to the previous one. It will also help her keep track of where she is in the table. As she becomes more proficient, you'll encourage her to recite the week's times table from memory.

Games

Each day, you and your child will play a game that practices the new facts. These fun games provide a lot of practice in a short amount of time. They also allow you to monitor your child's progress and correct any mistakes right away.

You and your child will play the same five games each week. The games build in difficulty over the course of the week, so that your child steadily becomes more proficient with each new set of multiplication facts. You'll find full directions for each game in the weekly plans, but here's a quick overview of how the games' challenge levels progressively increase.

- Day 1: *Multiplication Race.* In this game, all the answers are visible and arranged in order so that your child can easily pick out the correct answer to each multiplication problem.
- Day 2: *Multiplication Bump.* This game uses the same game board as Day 1's Multiplication Race. However, the spaces on the board are gradually covered so that your child begins to recall the answers from memory.
- Day 3: *Four in a Row.* This tic-tac-toe-like game has all of the answers visible, but they are not arranged in order.
- Day 4: *Roll and Cover.* This game focuses on facts with larger numbers to give these difficult facts some extra practice.
- Day 5: *Over Under.* This game has no printed answers so that your child has to recall all of the answers from memory.

Practice Pages

Your child will also complete a two-sided Practice Page each day. These pages include focused practice of the week's new multiplication facts, along with cumulative review of previous weeks' work.

Many children have difficulties with writing, but there's no reason why writing challenges should hold a child back from mastering the multiplication facts. If your child has dysgraphia or finds writing challenging, have her answer the Practice Page problems orally rather than writing them—simply point to each problem in order and have your child tell you the answer out loud. Younger children may also tire quickly when writing out answers, so feel free to have them solve the problems orally as well.

Teaching tips

- Schedule a consistent time each day for multiplication fact practice. You'll be less likely to forget, and your child will be less likely to argue. Try to choose a time when your child is alert and easily able to concentrate.
- Plan to work on the activities in this book for about 20 minutes each session, with five sessions per week. However, different children need different amounts

of time to master each group of facts. Feel free to take as long as your child needs to master each new set of facts, and don't move on to the new week until your child has the current week's multiplication facts learned.

- The dot array used in the lessons is key to helping children understand the strategies for finding answers. Allow your child to use the dot array whenever she needs it while playing the games and completing the Practice Pages. Then, as she becomes more comfortable with each set of multiplication facts, encourage her to transition to finding the answers mentally, without looking at the array.
- Some math programs teach children to skip-count in order to help them find answers to multiplication problems. (For example, a child might skip-count by 6 seven times to find 7×6: "6, 12, 18, 24, 30, 36, 42.") Rather than skip-counting, encourage your child to use the closest related fact possible to find the answer. (For example, to find 7×6, she might first recall 5×6 and then add two more groups of six.) Using stepping-stone facts is much faster, and it's also less error-prone than skip-counting.
- Keep the practice sessions positive, upbeat, and fast-paced. Have fun playing the games with your child, and enjoy the one-on-one time together.
- Many children freeze when they feel time pressure. Encourage your child to work as efficiently as possible, but don't time her as she does the Practice Pages unless she is aged ten years or older. For an older child, aim for her to know each multiplication fact in three seconds or less.

What you'll need

All of the game boards and Practice Pages you'll need for this program are included in the back of the book. You may want to keep a folder for storing the game boards, in case you want to use them again for review.

Before beginning Week 1, cut out the dot array and L-cover from pages 119 and 121. Prepare the L-cover by cutting along the dotted line and discarding the white rectangle as indicated.

You'll also need a few everyday items to complete the activities and play the games:

- 20 small counters of two different colors (plastic tiles, small blocks, dry beans, coins, etc.)
- Deck of regular playing cards with face cards removed
- Two regular, six-sided dice
- Paper and pencil

WEEK 1

×1 AND ×2
FACTS

WEEK 1 AT A GLANCE

Your child will memorize the ×1 and ×2 facts this week. Even if your child already knows the ×1 and ×2 facts, don't skip this week. In these lessons, you'll review multiplication basics, introduce an important visual model for learning the multiplication facts, and teach your child the rules for the fun games that you both will play throughout the book.

Although it may seem counterintuitive, you'll begin with the ×2 facts before teaching the ×1 facts. That's because the ×2 facts require children to think more deeply about what multiplication means—for example, that 5 × 2 means "five groups of two." With the ×1 facts, it's too easy for children to unthinkingly memorize the answers. To prevent this, you'll start with the ×2 facts so that your child gets into the habit of thinking about the meaning of multiplication right from the outset.

Most weeks, you'll do direct teaching only on Day 1. But with so much material to review this week, you'll teach a short lesson each day so that your child will be well-prepared to tackle the rest of the multiplication facts.

This week, your child will learn these facts:

1 × 1 = 1	1 × 2 = 2
2 × 1 = 2	2 × 2 = 4
3 × 1 = 3	3 × 2 = 6
4 × 1 = 4	4 × 2 = 8
5 × 1 = 5	5 × 2 = 10
6 × 1 = 6	6 × 2 = 12
7 × 1 = 7	7 × 2 = 14
8 × 1 = 8	8 × 2 = 16
9 × 1 = 9	9 × 2 = 18
10 × 1 = 10	10 × 2 = 20

Day 1

Review the Concept of Multiplication

Write **4 × 2 =** on a piece of paper and lay four groups of two counters on the table.

"4 × 2 means four groups of two."

"How many total counters are there in four groups of two?" *Eight.*

"So, since four groups of two is eight, 4 × 2 equals 8." Complete the written multiplication problem: **4 × 2 = 8.**

Write **6 × 2 =** on a piece of paper. "Can you show me this problem with counters?" Your child should lay six groups of two counters on the table. (If he's not sure what to do, prompt him by asking, "How many groups with two counters each would you lay out on the table?" *Six.*)

"How many total counters are there in six groups of two?" *12.* Complete the written multiplication problem: **6 × 2 = 12.**

If your child can easily model the multiplication problem with counters, go on to the next section. If he has trouble, direct him to use the counters to practice modeling each of the following multiplication problems.

3 × 4

5 × 3

1 × 7

Introduce ×2 facts

Show your child the dot array.

Write **5 × 2 =** on a piece of paper. Slide the L-cover to show five rows of two dots on the array.

"How many rows are showing?" *Five.*

"How many dots are showing in each row?" *Two.*

"How many total dots are showing?" *Ten.*

"We can think of each row as a group. Five rows of two dots is just like five groups of two. So, since ten dots are showing, 5 × 2 = 10."

Write **8 × 2 =** on a piece of paper. Have your child slide the L-cover down to match the equation.
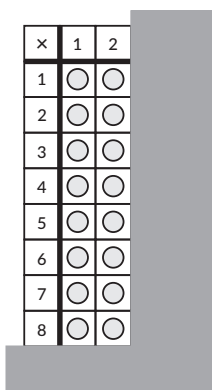
"How many total dots are showing?" *16*.
"So, what does 8 × 2 equal?" *16*.
Have your child complete the written multiplication problem: **8 × 2 = 16.**
Repeat this process with the rest of the ×2 multiplication facts, shown below. Each time, write out the problem. Then, have your child move the L-cover to match the problem and find the answer.

1 × 2 = 2
9 × 2 = 18
3 × 2 = 6
6 × 2 = 12
7 × 2 = 14
10 × 2 = 20
2 × 2 = 4
4 × 2 = 8

Play *Multiplication Race (×2)*

Teach your child how to play *Multiplication Race (×2)* and play.

MATERIALS

- *Multiplication Race/Bump (×2)* game board
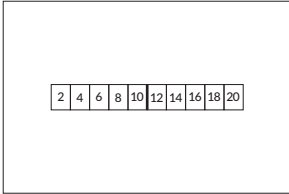
- Deck of cards, with face cards removed (40 cards total)
- Ten small counters per player

## OBJECT OF THE GAME

Be the first player to place a counter above or below every number on the game board.

HOW TO PLAY

Shuffle the cards and place them face down in a pile.

To play, you turn over the top card in the deck. Multiply the card's number by two and place one of your counters below the matching number on the game board. For example, if the card is a **6**, place a counter below the **12** on the game board, since 6 × 2 = 12. If the card is an ace, treat it as a 1.
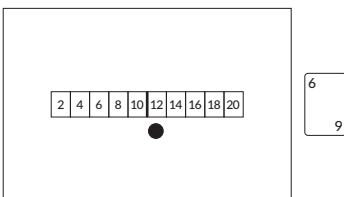
Then ask your child to do the same. When your child plays, have him place his counters *above* the matching number on the game board.

Play until one of you fills all ten spots (either above or below the game board). If you turn over a card and have already placed the matching counter, skip your turn.

Encourage your child to say each multiplication fact out loud as he plays: "7 × 2 is 14." Allow him to use the array and L-cover as needed to find the answers.

Note: Save this game board for tomorrow's game as well.

Independent practice

Have your child complete Practice Pages 1A and 1B in the Week 1 Section. If he has trouble with any of the problems on Practice Page 1B, encourage him to use the dot array and L-cover to help find the answers. Answers are on page 400.

Day 2

Review the commutative property

Write **7 × 2 =** on a piece of paper and slide the L-cover to show seven rows of two.

"7 × 2 means seven groups of two. So, what does 7 × 2 equal?" *14.*

Have your child complete the written multiplication problem: **7 × 2 = 14.**

Write **2 × 7 =** just below the previous problem. "If 7 × 2 means seven groups of two, what does 2 × 7 mean?" *Two groups of seven.*

Have your child slide the L-cover to show two rows of seven.

"Now we have two rows of seven instead of seven rows of two. How many dots are showing now?" *14.*

Have your child complete the written multiplication problem: **2 × 7 = 14.**

"Did the total number of dots change when we switched the order of the numbers?" *No.*

"2 × 7 and 7 × 2 have the same *total* number of dots. They just describe the *arrangement* of the dots in two different ways." Rotate the paper a quarter turn to the left to show that the two arrangements are identical.

×	1	2	3	4	5	6	7
1	○	○	○	○	○	○	○
2	○	○	○	○	○	○	○
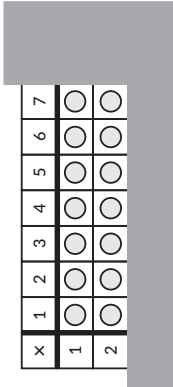
"We can multiply numbers in any order without changing the result. This can make it easier to solve multiplication problems and memorize the multiplication facts."

Write **9 × 2 =** on a piece of paper and slide the L-cover to match.

×	1	2
1	○	○
2	○	○
3	○	○
4	○	○
5	○	○
6	○	○
7	○	○
8	○	○
9	○	○
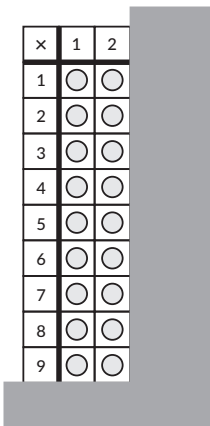
"Adding up nine groups of two can take a while. But since we can multiply numbers in any order, we can change the order of the numbers in the problem and still get the same answer."

Write **2 × 9 =** on a piece of paper and slide the L-cover to match.

×	1	2	3	4	5	6	7	8	9
1	○	○	○	○	○	○	○	○	○
2	○	○	○	○	○	○	○	○	○
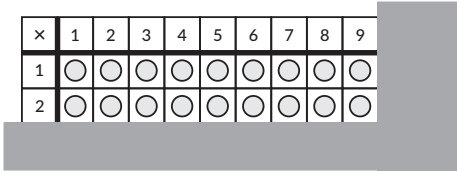
"It's a lot simpler to just add two groups of nine together to find the answer. What's 9 + 9?" *18.*

"So, 2 × 9 and 9 × 2 both equal 18." Have your child complete both of the written multiplication problems: **9 × 2 = 18** and **2 × 9 = 18**.

Repeat this activity with the following pairs of problems to make sure your child understands this important property of multiplication.

6 × 2 = 12   8 × 2 = 16
2 × 6 = 12   2 × 8 = 16

Play *Multiplication Bump (×2)*

Teach your child how to play *Multiplication Bump (×2)* and play.

MATERIALS

- *Multiplication Race/Bump (×2)* game board

2	4	6	8	10	12	14	16	18	20
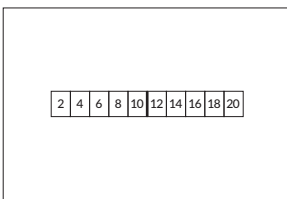
- Deck of cards, with face cards removed (40 cards total)
- Ten small counters per player, with a different color for each player

OBJECT OF THE GAME

Cover more spaces on the board than the other player.

HOW TO PLAY

Shuffle the cards and place them face down in a pile.

    To play, you begin by turning over the top card in the deck. Multiply the card's number by two and place one of your counters on the matching number on the game board. For example, if the card is a *4*, place a counter on the *8* on the game board, since 4 × 2 = 8.
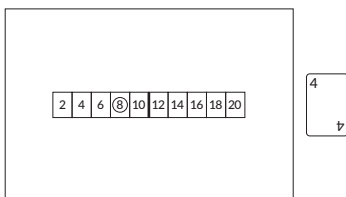
    Now ask your child to take a turn.

    As the game progresses, if the space containing your answer is already occupied by the other player, "bump" the other player's counter off the space and replace it with your own.

    As you play, remind your child to use the commutative property to make it easier to find the answers. For example, to find 7 × 2, he can think of two groups of seven rather than seven groups of two. Also encourage your child to say each multiplication fact out loud as he plays: "8 × 2 is 16."

    Play until all ten spots on the game board have been filled. Whoever has more counters on the board at the end wins the game.

Independent practice

Have your child complete Practice Pages 2A and 2B in the Week 1 section. Remind him to complete the times table on Practice Page 2A in order from top to bottom, without skipping around. Also continue to encourage him to use the dot array and L-cover to help him find the answers, if needed. Answers are on page 400.
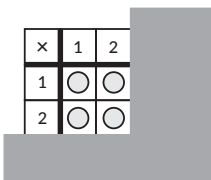
Day 3

Practice ×2 facts

Use the L-cover to show just one row of two dots on the array.
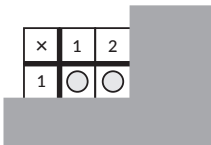
Begin a list of the ×2 facts by writing **1 × 2 =** on a piece of paper. "1 × 2 means one group of two. How many total dots are there?" *Two.*

Have your child complete the written multiplication problem: **1 × 2 = 2.**

Write **2 × 2 =** to continue the list of ×2 facts. Have your child slide the L-cover down to match the equation.

$$1 \times 2 = 2$$
$$2 \times 2 =$$

"So, what is 2 × 2?" *Four.*

Have your child complete the written multiplication problem: **2 × 2 = 4.**

Repeat this process with the ×2 multiplication facts in order up to 10 × 2. (They are listed on page 22). Have your child move the L-cover down a row for each new fact so that he connects the visual representation with the spoken and written equations.

Recite ×2 table

"This list we just made is called the 'times two' table. Learning to say the ×2 table will help you memorize these multiplication facts."

Demonstrate how to recite the table. Show one row of two dots on the array and say "1 × 2 is 2." Then, slide the L-cover down and say, "2 × 2 is 4." Continue in this way through 10 × 2.
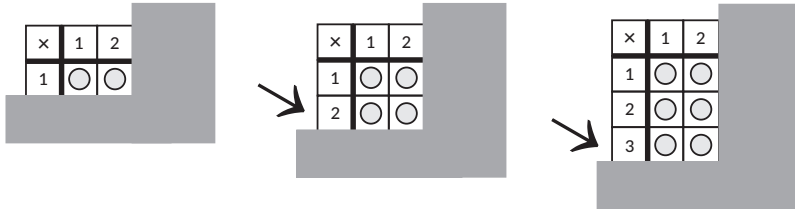
"1 × 2 is 2. 2 × 2 is 4. 3 × 2 is 6 . . ."

Then, ask your child to recite the ×2 table in the same way, sliding the L-cover as he recites so that the dots match each spoken multiplication fact. If your child has trouble keeping track of where he is in the table, prompt him with the next fact: "6 × 2 is?"

Play *Four in a Row (×2)*

Teach your child how to play *Four in a Row (×2)* and play.

MATERIALS

- *Four in a Row (×2)* game board

8	14	20	18	6	4
2	12	10	16	2	18
10	4	6	12	20	14
16	8	14	20	18	6
12	16	2	8	10	20
6	10	18	14	12	2

- Deck of cards, with face cards removed (40 cards total)
- 20 small counters per player, with a different color for each player

OBJECT OF THE GAME

Cover four spaces in a row, either horizontally, vertically, or diagonally.

HOW TO PLAY

Shuffle the cards and place them face down in a pile.

To play, you turn over the top card in the deck. Multiply the card's number by two and place one of your counters on the matching number on the game board. For example, if the card is a *3*, place a counter on the *6* on the game board, since $3 \times 2 = 6$.

8	14	20	18	6	4
2	12	10	16	2	18
10	4	⑥	12	20	14
16	8	14	20	18	6
12	16	2	8	10	20
6	10	18	14	12	2

Now ask your child to take a turn.

Encourage your child to say each multiplication fact out loud as he plays: "1 × 2 is 2."

Play until one player covers four spaces in a row on the game board. (The four spaces may be in a row horizontally, vertically, or diagonally.)

Independent practice

Have your child complete Practice Pages 3A and 3B in the Week 1 section. Remind him to complete the times table on Practice Page 3A in order from top to bottom, without skipping around. Answers are on page 401.

Day 4

Warm-up: Recite ×2 table

Have your child recite the ×2 table while sliding the L-cover to match each fact: *1 × 2 is 2. 2 × 2 is 4 . . .*

Practice ×1 facts

"Today we're going to work on the easiest group of multiplication facts: the ×1 facts."
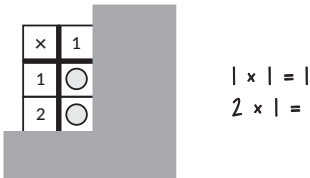
Use the L-cover to show just one dot on the array.
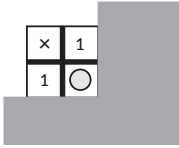
Begin a list of the ×1 facts by writing **1 × 1 =** on a piece of paper. "1 × 1 means one group of one. What does 1 × 1 equal?" *One.*

Have your child complete the written multiplication problem: **1 × 1 = 1.**

Write **2 × 1 =** to continue the list of ×1 facts. Have your child slide the L-cover down to match the equation.

$$1 \times 1 = 1$$
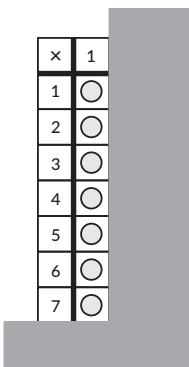$$2 \times 1 =$$

"So, what is 2 × 1?" *Two.*

Have your child complete the written multiplication problem: **2 × 1 = 2.**

Repeat this process with the ×1 multiplication facts in order up to 10 × 1. (They are listed on page 22).

Apply the commutative property to ×1 facts

Write **7 × 1 =** on a piece of paper and slide the L-cover to show seven rows of one.

"What's 7 × 1?" *Seven.*

Have your child complete the written multiplication problem: **7 × 1 = 7.**

Write **1 × 7 =** just below the previous problem. "If 7 × 1 means seven groups of one, what does 1 × 7 mean?" *One group of seven.*

Have your child slide the L-cover to show one row of seven.
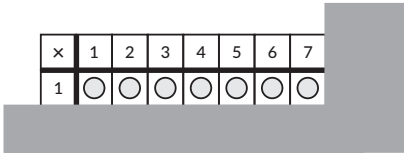
"Now we have one row of seven instead of seven rows of one. How many dots are showing now?" *Seven.*

Have your child complete the written multiplication problem: **1 × 7 = 7.**

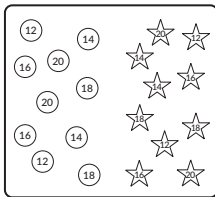"Just like before, the total number of dots stays the same no matter what order we multiply the numbers."

Play *Roll and Cover (×2)*

Teach your child how to play *Roll and Cover (×2)* and play.

MATERIALS

- *Roll and Cover (×2)* game board

- Two dice
- Ten small counters per player, with a different color for each player

OBJECT OF THE GAME

Cover all the numbers on your side of the game board.

HOW TO PLAY

Have each player choose one side of the game board to cover (either the circles or the stars). Place one die so that five dots are showing. You will not roll this die.

To play, roll the other die. Find the total of both dice. Multiply that total by two and cover the matching number on your side of the game board. For example, if you roll a *3*, cover a *16* on the game board, since 3 + 5 = 8, and 8 × 2 = 16.
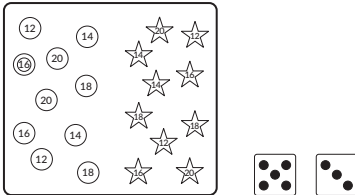
If you roll a *6*, you may cover any space on your side of the game board. If you roll a number that you have already covered, play passes to the other player.

As you play, remind your child that he can use the commutative property of multiplication to make it easier to figure out the problems. For example, to find 7 × 2, he can add together two groups of seven instead of adding up seven groups of two.

Play until one person has covered every number on his side of the game board.

Independent practice

Have your child complete Practice Pages 4A and 4B in the Week 1 section. Remind him to complete the ×1 and ×2 tables on Practice Page 4A in order from top to bottom. Answers are on page 401.

Day 5

Warm-up: Recite ×1 and ×2 tables

Have your child recite the ×1 and ×2 tables. Encourage him to do so from memory, without using the dot array. However, if he has trouble, allow him to use the dot array and L-cover while reciting.

Practice multiplication facts written vertically

Write **6 + 5 = 11** on a piece of paper both horizontally and vertically.

$$6 + 5 = 11 \qquad \begin{array}{r} 6 \\ + 5 \\ \hline 11 \end{array}$$

"When you learned to add, you learned that we can write addition and subtraction problems across the paper horizontally or down the paper vertically. We can write multiplication problems both horizontally and vertically, too."

Write **2 × 5 = 10** on a piece of paper both horizontally and vertically.

$$2 \times 5 = 10 \qquad \begin{array}{r} 2 \\ \times 5 \\ \hline 10 \end{array}$$

"Both of these problems mean the same thing. They're just written two different ways. You'll be solving problems written vertically on your Practice Page today."

Introduce the written multiplication chart

Show your child Practice Page 5A in the Week 1 section.

"This chart organizes all of the multiplication facts from 1 × 1 up to 10 × 10. Each week, you'll complete the parts of the chart that you've learned so far. By the end of the book, you'll know every multiplication fact in the chart!"

"To complete a box, you multiply the number at the beginning of the row by the number at the top of the column." Point to the box shown below.

"So, to find the answer that goes in this box, multiply 2 × 4, because *2* is the number for the row and *4* is the number for the column. What's 2 × 4?" *Eight.*

"So, *8* is the answer that goes in this box."

"You'll fill in all the white squares in the chart when you do today's Practice Pages."

Play *Over Under (×2)*

Teach your child how to play *Over Under (×2)* and play.

MATERIALS

- Deck of cards, with face cards removed (40 cards total)
- *Over Under (×2)* game board
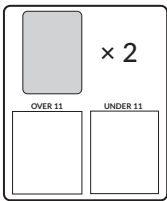
OBJECT OF THE GAME

Win the most cards.

HOW TO PLAY

Place the *Over Under (×2)* game board on the table between the two players. Remove one card from the deck without looking and place it aside. You will not use this card. Shuffle the remaining cards and place them face-down next to the game board. Decide which player is "Over" and which player is "Under."

To play, have your child turn over a card from the pile and place the card face-up in the gray box. Have your child multiply the number on the card by two.

If the answer is less than 11, the player who is "Under" wins the card and places it in the "Under" box. If the answer is greater than 11, the player who is "Over" wins the card and places it in the "Over" box. For example, if your child turns over an *8*, he says, "8 × 2 equals 16," and the player who is "Over" wins the card.
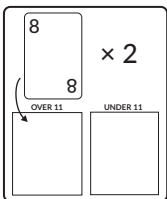
Now, you take a turn, following the same procedure.

Play until you have used all the cards. Whoever wins more cards wins the game.

Independent practice

Have your child complete Practice Pages 5A and 5B in the Week 1 section. (On Practice Page 5A, your child should only fill in the empty white boxes, and not the gray boxes.) Answers are on page 402.
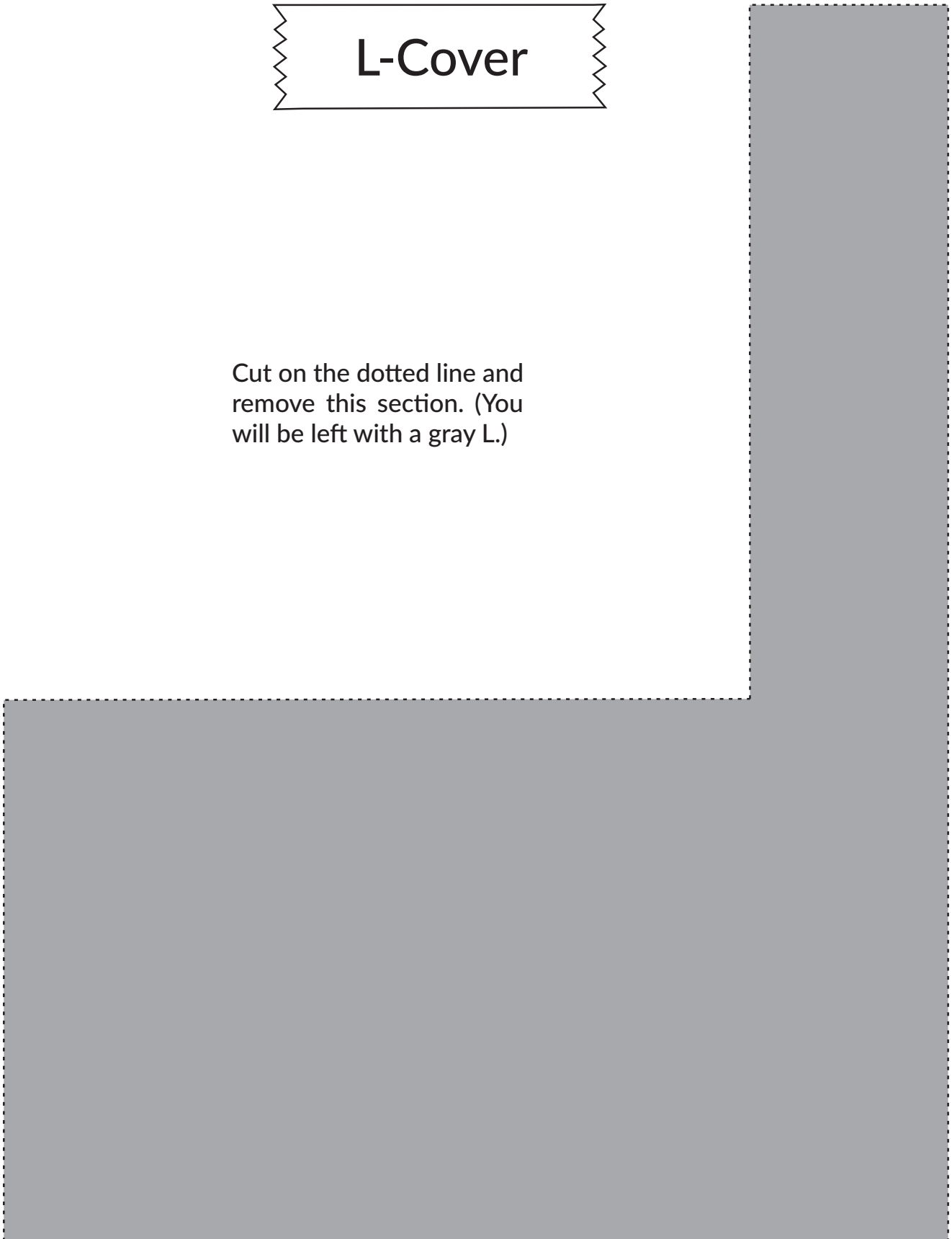
Once your child finishes the Practice Pages, point out that he filled in 36 of the 100 facts in the multiplication chart on Practice Page 5A. After just one week, he already knows over one-third of the facts!

GAME BOARDS

Dot Array

×	1	2	3	4	5	6	7	8	9	10
1	●	●	●	●	●	●	●	●	●	●
2	●	●	●	●	●	●	●	●	●	●
3	●	●	●	●	●	●	●	●	●	●
4	●	●	●	●	●	●	●	●	●	●
5	●	●	●	●	●	●	●	●	●	●
6	●	●	●	●	●	●	●	●	●	●
7	●	●	●	●	●	●	●	●	●	●
8	●	●	●	●	●	●	●	●	●	●
9	●	●	●	●	●	●	●	●	●	●
10	●	●	●	●	●	●	●	●	●	●

L-Cover

Cut on the dotted line and remove this section. (You will be left with a gray L.)

Ten-Frames

Multiplication Race/Bump (×2) Game Board

2	4	6	8	10	12	14	16	18	20

Four in a Row (×2) Game Board

8	14	20	18	6	4
2	12	10	16	2	18
10	4	6	12	20	14
16	8	14	20	18	6
12	16	2	8	10	20
6	10	18	14	12	2

Roll and Cover (×2) Game Board

Stars: 12, 16, 18, 20, 20, 14, 12, 14, 18, 16

Circles: 14, 18, 18, 14, 20, 20, 12, 12, 16, 16

Over Under (×2) Game Board
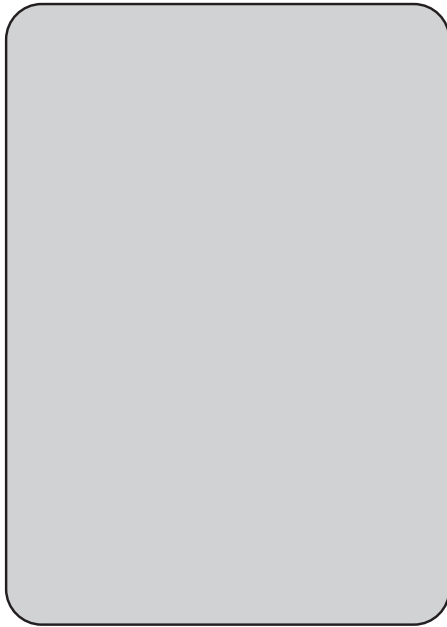
×2

OVER 11

UNDER 11
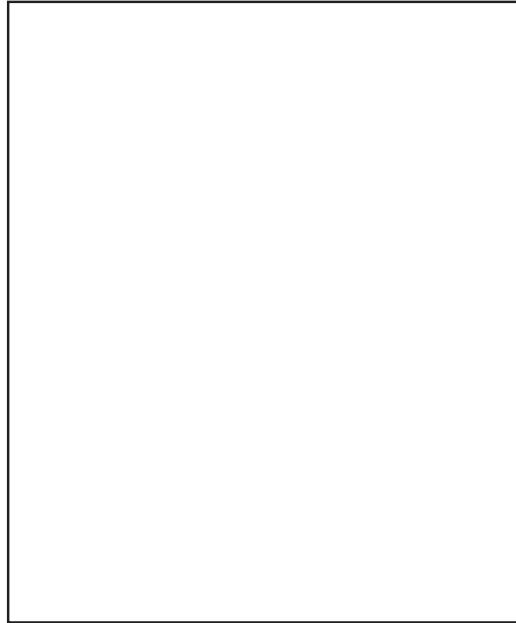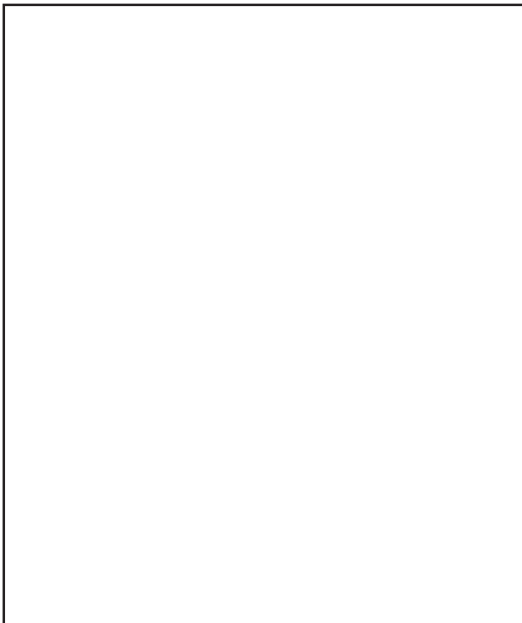
PRACTICE PAGES

Week 1	Practice Page 1A

1 × 2 = ____

2 × 2 = ____

3 × 2 = ____

4 × 2 = ____

5 × 2 = ____

6 × 2 = ____

7 × 2 = ____

8 × 2 = ____

9 × 2 = ____

10 × 2 = ____

| Week 1 | Practice Page 1B |

3 × 2 = _____   2 × 2 = _____   4 × 2 = _____

5 × 2 = _____   6 × 2 = _____   8 × 2 = _____

10 × 2 = _____   7 × 2 = _____   9 × 2 = _____

Week 1	Practice Page 2A

$1 \times 2 =$ _____

$2 \times 2 =$ _____

$3 \times 2 =$ _____

$4 \times 2 =$ _____

$5 \times 2 =$ _____

$6 \times 2 =$ _____

$7 \times 2 =$ _____

$8 \times 2 =$ _____

$9 \times 2 =$ _____

$10 \times 2 =$ _____

| Week 1 | Practice Page 2B |

4 × 2 = _____   2 × 2 = _____   3 × 2 = _____

7 × 2 = _____   6 × 2 = _____   5 × 2 = _____

9 × 2 = _____   8 × 2 = _____   10 × 2 = _____

Week 1	Practice Page 3A

1 × 2 = _____

2 × 2 = _____

3 × 2 = _____

4 × 2 = _____

5 × 2 = _____

6 × 2 = _____

7 × 2 = _____

8 × 2 = _____

9 × 2 = _____

10 × 2 = _____

Week 1	Practice Page 3B

6 × 2 = _____   9 × 2 = _____   8 × 2 = _____

5 × 2 = _____   10 × 2 = _____   2 × 2 = _____

4 × 2 = _____   7 × 2 = _____   3 × 2 = _____

2 × 7 = _____   2 × 2 = _____   2 × 8 = _____

2 × 10 = _____   2 × 9 = _____   2 × 3 = _____

2 × 6 = _____   2 × 4 = _____   2 × 5 = _____

Week 1	Practice Page 4A

1 × 1 = _____   1 × 2 = _____

2 × 1 = _____   2 × 2 = _____

3 × 1 = _____   3 × 2 = _____

4 × 1 = _____   4 × 2 = _____

5 × 1 = _____   5 × 2 = _____

6 × 1 = _____   6 × 2 = _____

7 × 1 = _____   7 × 2 = _____

8 × 1 = _____   8 × 2 = _____

9 × 1 = _____   9 × 2 = _____

10 × 1 = _____   10 × 2 = _____

Week 1	Practice Page 4B

$8 \times 1 =$ _____ $10 \times 1 =$ _____ $9 \times 1 =$ _____

$2 \times 1 =$ _____ $6 \times 1 =$ _____ $5 \times 1 =$ _____

$10 \times 2 =$ _____ $7 \times 1 =$ _____ $4 \times 2 =$ _____

$9 \times 2 =$ _____ $8 \times 2 =$ _____ $7 \times 2 =$ _____

$3 \times 2 =$ _____ $3 \times 1 =$ _____ $4 \times 1 =$ _____

$2 \times 2 =$ _____ $1 \times 1 =$ _____ $6 \times 2 =$ _____

Week 1   **Practice Page 5A**

×	1	2	3	4	5	6	7	8	9	10
1										
2										
3										
4										
5										
6										
7										
8										
9										
10										

Week 1	Practice Page 5B

1	6	9	2	10
× 2	× 2	× 2	× 2	× 2

3	4	8	5	7
× 2	× 2	× 2	× 2	× 2

8	2	4	5	9
× 1	× 1	× 1	× 1	× 1

10	3	7	1	6
× 1	× 1	× 1	× 1	× 1

MULTIPLICATION FACTS THAT STICK

The fun, engaging program that will help your child master the multiplication facts once and for all—without spending hours and hours drilling flash cards!

Multiplication Facts That Stick will guide you, step-by-step, as you teach your child to understand and memorize the multiplication facts, from 1 × 1 through 10 × 10. Hands-on activities, fun games your child will love, and straightforward practice pages help students remember the multiplication facts for good.

In 15 minutes per day (perfect for after school, or as a supplement to a homeschool math curriculum) any child can master the multiplication facts and develop greater confidence in math, in just ten weeks!

Mastery of the math facts is the foundation for all future math learning. Lay that foundation now, and make it solid, with Multiplication Facts That Stick!

WHAT PARENTS ARE SAYING:

"The games really helped my boys practice the facts without feeling the pressure of being timed or being overwhelmed by a lot of writing."

"Simple to use! Using your book was the best investment of time in my 11 years of homeschooling."

Kate Snow is a math educator on a mission to help parents raise kids who are capable and confident in math. With experience as a homeschool parent, classroom teacher, and curriculum writer, she holds a B.A. in Mathematics from Harvard University and an M.S. in Elementary Education from Walden University. Kate is the author of *Preschool Math at Home: Simple Activities to Build the Best Possible Foundation for Your Child* and the *Math Facts That Stick* series.
She writes at kateshomeschoolmath.com.

Grades 3-7