SCHOLASTIC

Do The Math™

Created by
Marilyn Burns

Multiplication

A

Basic Concepts

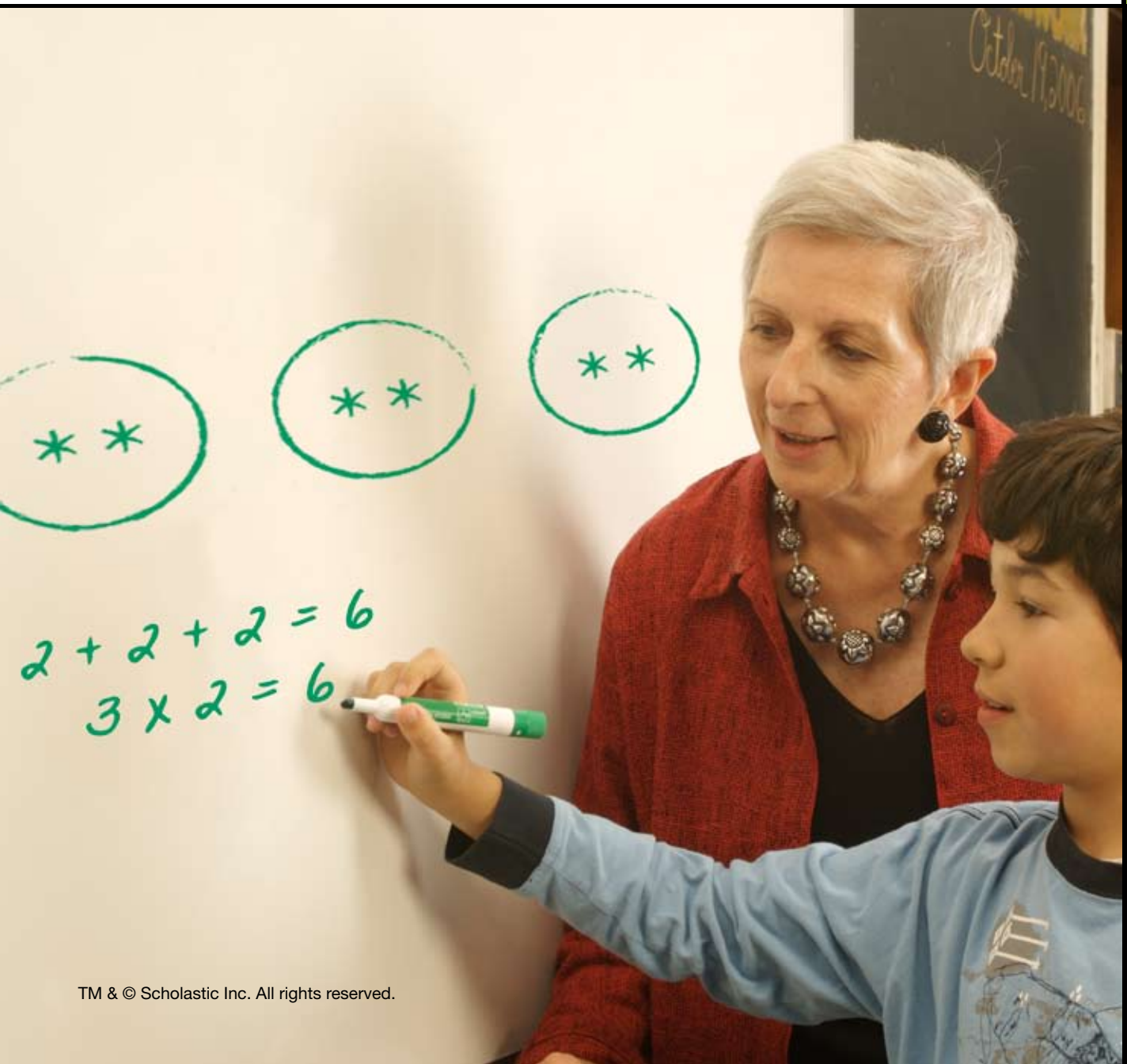
1 2 3 4 5 6 7 8 9 10 40 16 15 14 13 12 11 10 09 08 07

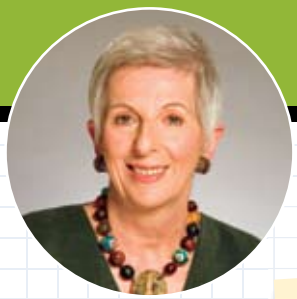
OVERVIEW

Introduce Multiplication

Through the game of *Circles and Stars*, students learn how multiplication can be thought of as combining equal groups.

Lessons 1–5

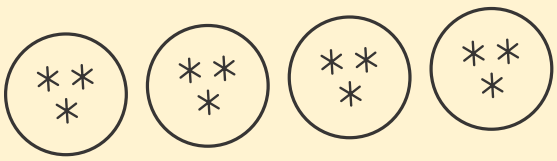




FROM MARILYN BURNS

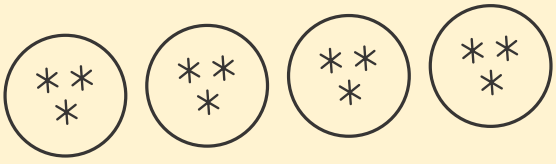
Dear Colleague,

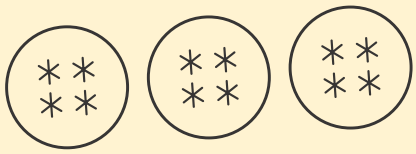
Lessons 1–5 introduce multiplication through the game of *Circles and Stars*. The game is engaging for students, easy to teach, and provides them with firsthand experience and a visual context for understanding multiplication. On each turn, students roll a 1–6 number cube to find out how many circles to draw and then roll the cube again to find out how many stars to draw in each circle. For example, for a first roll of 4 and a second roll of 3, the student would draw this:



Students then figure out how many stars they drew. After seven turns, players figure out who drew more stars in all.

Playing *Circles and Stars* helps students understand that multiplication can be thought of as combining equal groups and is, therefore, related to addition when the same number is added multiple times. From playing, students become familiar with multiplying numbers from 1×1 to 6×6. They also learn that multiplication is commutative; that is, when they roll a 4 first and then a 3, they get the same number of stars as when they roll a 3 first and then a 4.





In Lessons 1–5, students...

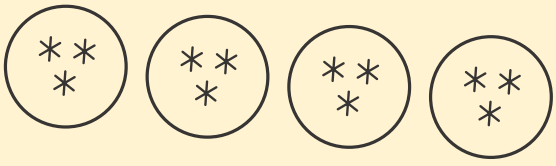
- Represent combining equal groups with related addition and multiplication equations.
- Communicate ideas with key math vocabulary: *equal*, *multiplication*, *multiplication equation*, and *times*.

> Lessons 1–5 introduce multiplication by engaging students in playing the game of *Circles and Stars*.

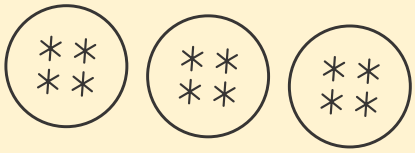
Lessons 1–5

Introduce Multiplication

After students know how to play the game, they learn to represent each of their turns with addition and multiplication equations. This helps them connect the standard symbols to their experience and also strengthens the connection between addition and multiplication.

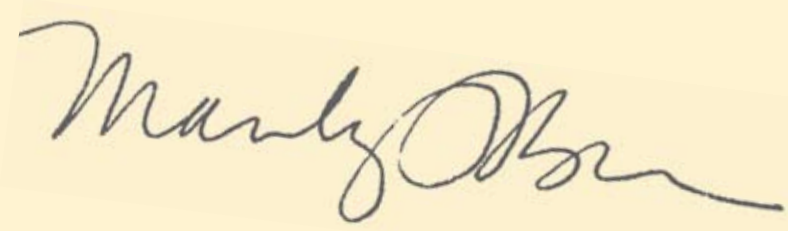


$3 + 3 + 3 + 3 = 12$
$4 \times 3 = 12$



$4 + 4 + 4 = 12$
$3 \times 4 = 12$

Students also learn to play *Circles and Stars Capture*, a related card game that reinforces student understanding while providing consistent practice.



PLANNER

	LESSON 1	LESSON 2
Lesson Summary	**Students learn how to play the multiplication game *Circles and Stars*, focusing on drawing and combining equal groups of stars.**	**Students learn how to write and read addition and multiplication equations for *Circles and Stars*.**
Objectives Find an alignment to standards at **www.scholastic.com/DoTheMath**	• Combine equal groups. • Communicate ideas with key math vocabulary: *multiplication*.	• Represent combining equal groups with related addition and multiplication equations. • Introduce key math vocabulary: *equal*, *multiplication*, *multiplication equation*, and *times*. • Communicate ideas with key math vocabulary: *equal, multiplication, multiplication equation,* and *times*.
Materials T = Teacher Bag G = Games Bag S = Student Bag	• ***WorkSpace*** pages 2–5 • **number cubes** (1–6) T S	• ***WorkSpace*** pages 4–6, 61 • ***Do The Math Community News*** • **paper chart**
Built-in Differentiation	The muliplication game *Circles and Stars* presents **visual representation** of multiplication as repeated addition, providing a clear introduction to the idea of equal groups.	The **routine** of writing related addition and multiplication equations for each turn of *Circles and Stars* reinforces the relationship between addition and multiplication.

Teaching Arithmentic: Lessons for Introducing Multiplication
by Marilyn Burns, pages 11–22

Introduce Multiplication

LESSON 3	LESSON 4	LESSON 5
Students learn that the same number of items can be represented by different equal groups.	**Students work in pairs to write multiplication equations for a chart.**	ASSESSMENT ✓ Progress Monitoring **Students demonstrate understanding of the objectives for Lessons 1–4 by completing *WorkSpace* pages independently.**
• Represent combining equal groups with related addition and multiplication equations. • Communicate ideas with key math vocabulary: *equal, multiplication equation,* and *times.*	• Represent combining equal groups with related addition and multiplication equations. • Communicate ideas with key math vocabulary: *equal, multiplication equation,* and *times.*	• Represent combining equal groups with related addition and multiplication equations. • Communicate ideas with key math vocabulary: *multiplication equation.*
• ***WorkSpace*** page 7 • ***Circles and Stars Capture*** **cards** G • **chart paper**	• ***WorkSpace*** page 7 • ***Circles and Stars Capture*** **cards** G • ***Multiplication Equations*** **chart** • **blank paper**	• ***WorkSpace*** pages 8–12 • ***Circle and Stars Capture*** **cards** G
Regularly **reading aloud** the multiplication equations using the terms *groups of* and *equals* reinforces the concept and the **language** used to express them.	**Working in pairs** provides students time to practice the language to express his or her ideas before communicating them to the whole group.	Assessing with familiar **visual models and symbolic representations** allows students to show their understanding without having to approach the material in an unfamiliar context.

TeacherSpace: Multiplication DVD contains videos, professional articles, and reproducibles to support teaching these lessons.

LESSON 1 Learning the *Circles and Stars* multiplication game

Lesson Summary

Students learn how to play the multiplication game *Circles and Stars*, focusing on drawing and combining equal groups of stars.

Objectives

- Combine equal groups.
- Communicate ideas with key math vocabulary: *multiplication.*

Materials

- ***WorkSpace*** pages 2–5
- **number cubes** (1–6) T S

T = Teacher Bag

S = Student Bag

Language Development

Key Math Vocabulary

ENGLISH	SPANISH
multiplication	*multiplicación*

Academic Vocabulary

ENGLISH	SPANISH
game	juego
roll	rodar
step	paso
total	*total*
turn	*turno*

Cognates are shown in italics; pointing out the similarity of these words to their English equivalents will help your Spanish-speaking students acquire math vocabulary.

WHOLE GROUP

STEP 1 Initiate a discussion about multiplication.

❶ Introduce the lesson.

Today, you'll play* Circles and Stars, *a game that will help you learn about* multiplication. *But first, I am interested in what you already know about multiplication.

Write *multiplication* on the board.

multiplication

❷ Students share prior knowledge about multiplication.

Point to the word *multiplication* on the board and read it aloud.

***What do you know about* multiplication*? What words come to mind when I say* multiplication.**

Have students think, pair, share.

SUPPORTING INSTRUCTION

Think, pair, share is a routine that will be used throughout this module. Having students talk in pairs provides them a "safe" way to share ideas that they may not be quite sure of, think of words to articulate their ideas, brainstorm, and practice what they will say when they share with the larger group.

Explain the routine to students: they should think first and then talk with their partners, taking turns listening and speaking, and finally discussing what they will say when they are called on to share with the whole group.

WHOLE GROUP

STEP 2 Teach how to play a multiplication game.

1 Demonstrate a turn of *Circles and Stars*.

To play, a player rolls a number cube to find out how many circles to draw, then rolls the cube again to find out how many stars to draw in each circle. The player then writes how many stars in all.

I'll show you how to play. On my turn, I roll the number cube and draw that number of circles. Suppose I roll a 2. I draw 2 circles large enough to fit up to 6 stars in each.

Draw 2 circles on the left side of the board.

Now I roll again. Suppose I roll a 4. I draw 4 stars in each circle.

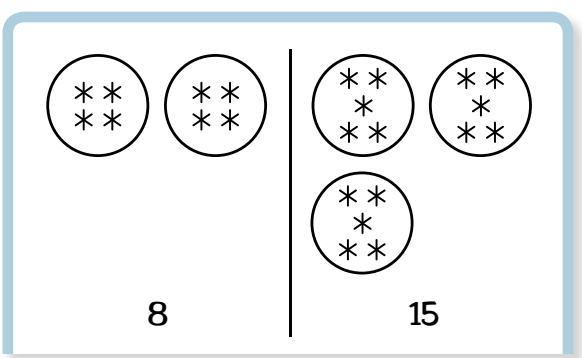
Draw 4 stars in each of the 2 circles.

How many stars did I draw in all? (8)

Write *8* to show how many stars in all.

2 Choose a student to demonstrate a turn.

Ask a student to draw circles and stars on the board just like you did. The first roll is 3 and the second roll is 5.



WHOLE GROUP

STEP 3 Guide students through four practice turns.

1 Walk students through the first problem on *WorkSpace* page 2.

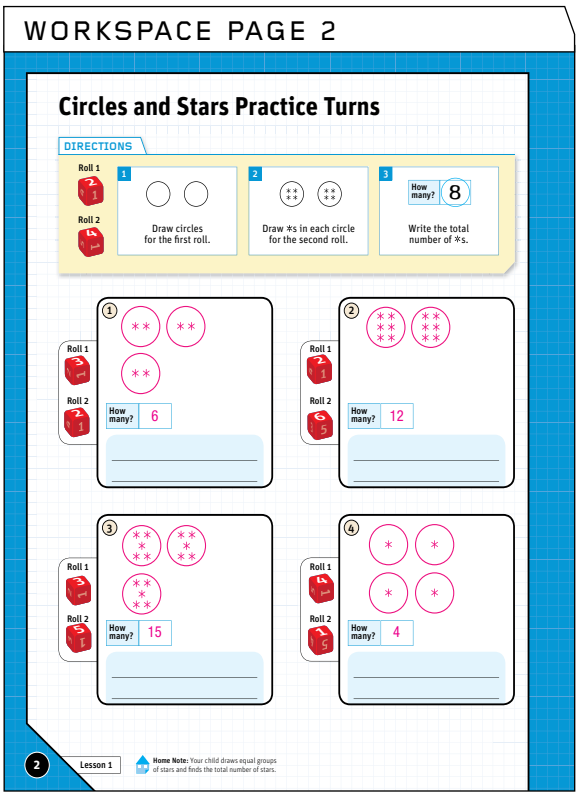
The first roll is 3. What do you draw? (3 circles)

The second roll is 2. What do you draw? (2 stars in each circle)

How many stars did you draw in all? (6 stars in all)

Write 6 in the* How many? *box.

2 Continue to guide students as they complete *WorkSpace* page 2.



CONTINUE

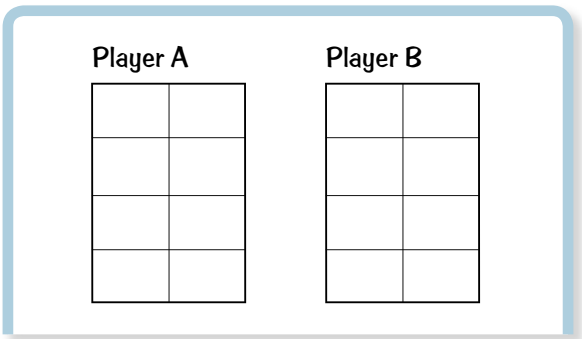
WHOLE GROUP

STEP 4 Two students demonstrate a complete game.

❶ Explain the rules for a complete game.

Use the rules shown to the right to explain.

Draw simplified versions of *WorkSpace* pages 3 and 4 on the board.



❷ Students demonstrate a complete game.

Choose two students to play a game of eight turns each. Record the results on the gameboards you drew on the board.

After each player completes a turn, ask the other player to check the work.

When the students complete eight turns each, explain how to figure the total.

💬 ***Now each of you writes your total. Your total is the number of stars you drew for all eight turns. The player with the greater number of stars wins.***

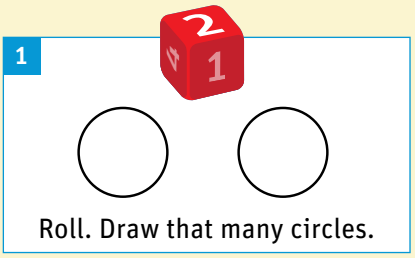
HOW TO PLAY Multiplication Game

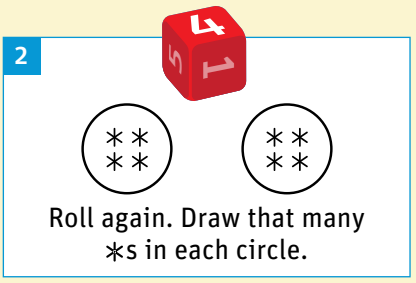
Circles and Stars

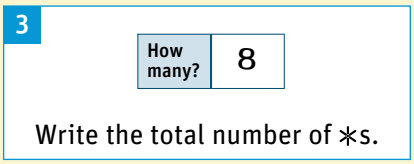
What you need

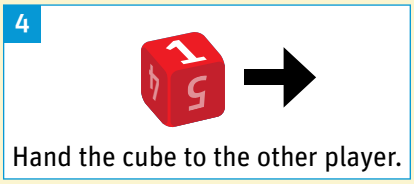
- number cube (1–6)
- *WorkSpace* pages 3 and 4 or blank paper
- pencil

➤ **Players take turns. Each turn has four steps.**







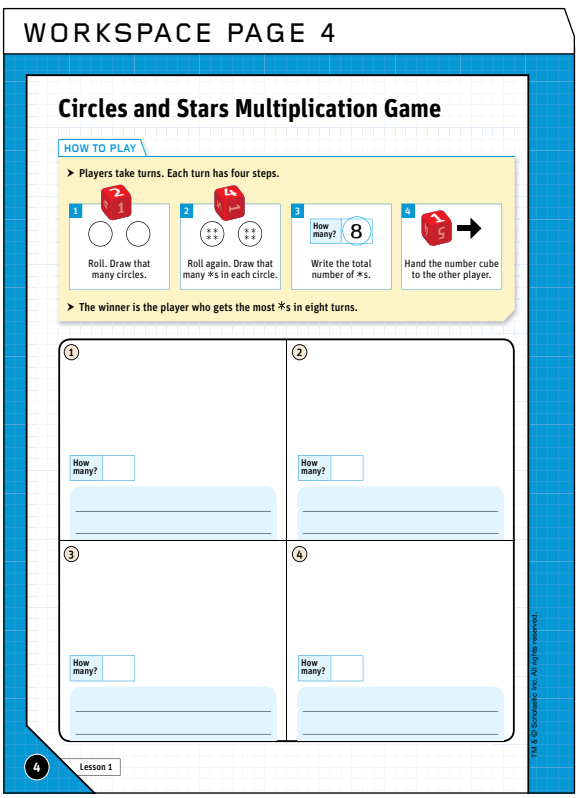


➤ **The winner is the player who gets the most ⁎s in eight turns.**

STEP 5 Partners play the game.

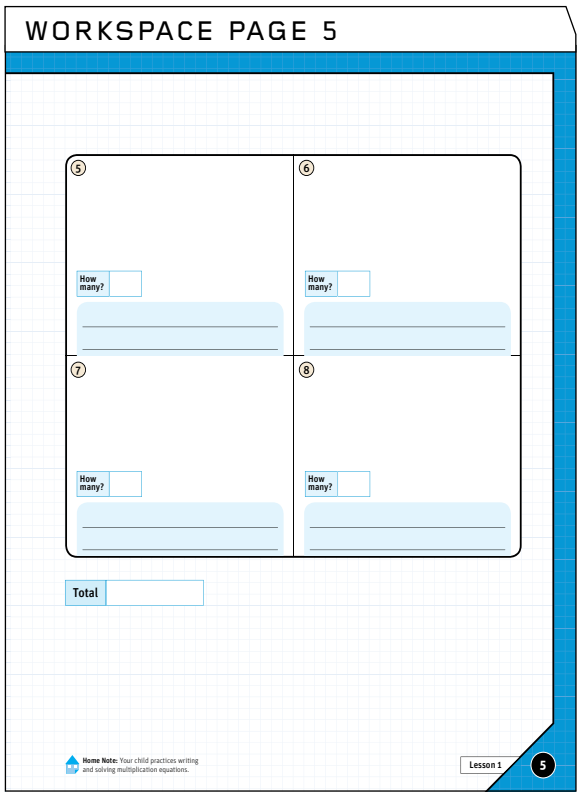
❶ Partners play a game on *WorkSpace* pages 4 and 5.

Remind students that an important part of their job is to check their partner's work.



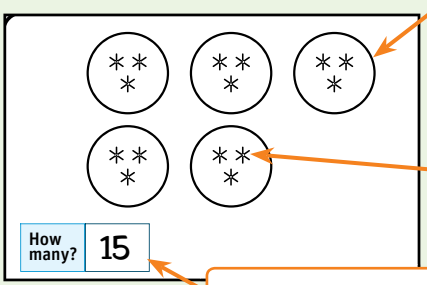
❷ Partners play again.

If students have time, they may continue playing *Circles and Stars* on blank paper. The rules are given on page 3.



SUPPORTING INSTRUCTION

Observe students as they work.



EXAMPLE The number of circles should match the number of the first roll.

EXAMPLE The number of stars in each circle should match the number of the second roll.

EXAMPLE *How many?* should match the total number of stars.

STOP