Advance Preparation

Review the game *Baseball Multiplication*. Either make a transparency of the *Baseball Multiplication* Game Mat (*Math Masters*, page 443) or copy all the information onto the board. While children are learning the game, it is helpful for them to have copies of the game mat.

**Key Concepts and Skills**

- Practice multiplication facts.  
  *Operations and Computation Goal 3*
- Use the Commutative Property of Multiplication (the turn-around rule), the Multiplicative Identity, and the Zero Property of Multiplication to generate multiplication facts.  
  *Patterns, Functions, and Algebra Goal 4*

**Key Activities**

Children practice multiplication facts while playing *Baseball Multiplication*.

**Ongoing Assessment:**

**Recognizing Student Achievement**

Use Mental Math and Reflexes.  
*Operations and Computation Goal 6*

**Materials**

- Student Reference Book, pp. 274 and 275; pp. 276 and 277 (optional)
- Home Link 4-6
- transparency of *Math Masters*, p. 443 (optional)
- slate
- half-sheet of paper
- per group (2 teams): *Math Masters*, pp. 443 and 444 (optional), 2 six-sided dice, 4 pennies or other counters, 1 twelve-sided die (optional)

**Teaching the Lesson**

**Practicing with ×, ÷ Fact Triangles**

- *Fact Triangles*  
  Children practice multiplication and division with Fact Triangles.

**Math Boxes 4-7**

- *Math Journal 1*, p. 91  
  Children practice and maintain skills through Math Box problems.

**Home Link 4-7**

- *Math Masters*, p. 104  
  Children practice and maintain skills through Home Link activities.

**Ongoing Learning & Practice**

**Differentiation Options**

**READINESS**

**Practicing Multiplication Facts with Arrays**

- *Math Masters*, p. 105  
  Children list facts and products for target factors. They draw arrays for facts they need to practice.

**ENRICHMENT**

**Making Arrays for 24**

- *Math Masters*, p. 416  
  counters  
  Children explore all possible rectangular arrays with 24 counters.

**EXTRA PRACTICE**

**Exploring Properties of Multiplication**

- die  
- paper  
- calculator (optional)  
  Children investigate whether the product in multiplication number sentences is affected when they change the order in which they multiply the factors.
Getting Started

Mental Math and Reflexes
Pose equal-sharing and equal-grouping number stories. Provide manipulatives as needed. Children record their answers on half-sheets of paper. They share their solution strategies with the class.

Suggestions:
- Ice-cream bars come 10 to a package. There are 30 ice-cream bars. How many packages are there? 3 packages
- There are 24 cookies. Each child will get 6 cookies. How many children are there? 4 children
- How many cookies are left over? 0 cookies
- 5 children share 17 pencils equally. How many pencils does each child get? 3 pencils
- How many pencils are left over? 2 pencils

Ongoing Assessment: Recognizing Student Achievement
Use Mental Math and Reflexes to assess children’s progress toward using equal sharing and equal grouping to demonstrate the meaning of division. Children are making adequate progress if they are able to solve the ○○○ and ●●● problems with or without manipulatives. Some children may be able to solve the ○○○ problems with or without manipulatives. They also may be able to supply the number models for the stories.

1 Teaching the Lesson

Math Message Follow-Up
Volunteers share their solution strategies and number models for the Math Message. Sample answer: $45 \div 9 = 5, 9 \times 5 = 45$

Poll the class to see how many children are baseball fans. Explain that today they will learn a math game with rules similar to those in baseball, but that playing the game does not depend on knowing baseball rules. To assist children who are unfamiliar with baseball terms, provide a photo of a baseball field that clearly shows the diamond. You, or a child who is familiar with baseball, may use it to describe the game. Include a discussion of the baseball terms strike, out, run, batting, and pitching.
Introducing Baseball Multiplication

(Student Reference Book, pp. 274 and 275; Math Masters, p. 443)

Explain that the game, Baseball Multiplication, is one way to practice multiplication facts. Players use multiplication facts to score runs in the game. To support English language learners, discuss the game of baseball, providing visuals such as video, pictures, and actual equipment. During the discussion, be sure to review terms necessary to play Baseball Multiplication, bat, ball, run, out, bases, pitcher, batter. To teach the game, divide the whole class into two teams and play an inning. Flip a coin to decide which team will bat first.

Have children follow along on pages 274 and 275 in the Student Reference Book as you explain the rules. Display a transparency of the game mat, or refer to the same information on the board.

NOTE While children are learning to play Baseball Multiplication, it is helpful for them to have copies of Math Masters, page 443. After children are familiar with the game, they can make their own baseball diamond, scoreboard, and runs-and-outs tally.

Playing Baseball Multiplication

(Student Reference Book, pp. 274–277; Math Masters, pp. 443 and 444)

Small groups or partners form teams and play Baseball Multiplication. While children are playing the game, remind them to use the multiplication by 1 shortcut. Ask: If a score of 5 or less is an out, what are some “pitches” that would result in an out? Sample answer: Rolling a 1 on one die and a 1, 2, 3, 4, or 5 on the other die would result in an out. Rolling two 2s would also result in an out.

Adjusting the Activity

The basic game uses facts through 6 × 6. The advanced version of Baseball Multiplication, described on pages 276 and 277 in the Student Reference Book, uses products up to 12 × 12. Children use Math Masters, page 444 to keep score.
Ongoing Learning & Practice

Practicing with \( \times, \div \) Fact Triangles

At first, children should limit themselves to finding products. That is, one partner covers the number below the large dot, and the other gives the product of the uncovered factors. When children are well on their way to learning products, they can cover one of the other two numbers to practice finding missing factors.

Math Boxes 4-7
(Math Journal 1, p. 91)

Mixed Practice Math Boxes in this lesson are paired with Math Boxes in Lesson 4-5. The skill in Problem 6 previews Unit 5 content.

Writing/Reasoning Have children write an answer to the following: For problem 2, explain how you found the range. Sample answer: I subtracted the minimum or the lowest seedling height from the maximum or the highest seedling height.

Home Link 4-7
(Math Masters, p. 104)

Home Connection Children complete fact families for multiplication and division Fact Triangles.

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Math Journal 1, p. 91

4-7 Math Boxes

1. Draw Xs in a 5-by-9 array.
   - How many Xs?
   - Write a number model for the array.
   - \( 5 \times 9 = 45 \)

2. Use counters to solve.
   - Some children are sharing 22 marbles equally. Each child gets 6 marbles. How many children are sharing?
   - 3 children
   - How many marbles are left over?
   - 4 marbles

3. Fill in the number grid.
   - \( 3,035 \)
   - \( 3,000 \)
   - \( 2,980 \)
   - \( 2,920 \)
   - \( 2,800 \)
   - \( 1,070 \)

4. Write a number model for the array.
   - \( \begin{array}{c}
   3 \times 5 = 15 \\
   5 \times 3 = 15
   \end{array} \)

5. Fill in the number grid.
   - \( 3,045 \)
   - \( 3,100 \)
   - \( 3,000 \)
   - \( 3,050 \)
   - \( 3,000 \)

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Home Link Master

Fact Families

Write the fact family for each Fact Triangle.

1. \( 30 = 5 \times 6 \)
2. \( 24 = 8 \times 3 \)
3. \( 18 = 9 \times 2 \)

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Math Masters, p. 104
### Differentiation Options

#### READINESS

**Practicing Multiplication Facts with Arrays**

*(Math Masters, p. 105)*

To provide experience with arrays that represent basic facts, have children list basic facts and their products on *Math Masters*, page 105 and draw arrays for the facts they don’t know.

#### ENRICHMENT

**Making Arrays for 24**

*(Math Masters, p. 416)*

To apply children’s knowledge of arrays, have them arrange 24 counters in as many different rectangular arrays as possible. They draw each array and write the number model on centimeter grid paper. Have children describe each array they drew. Encourage them to use vocabulary like *row*, *column*, *equal*, and so on.

#### EXTRA PRACTICE

**Exploring Properties of Multiplication**

To provide practice applying the Commutative and Associative Properties of Multiplication, have children roll a die 3 times to generate three 1-digit numbers and record them on paper. Then, using the numbers as factors, they write as many different number sentences as they can and calculate the product for each. Children may use calculators to find the products. For example, the factors 3, 6, and 2 can be used to write the following number sentences: $3 \times 6 \times 2 = 36; 3 \times 2 \times 6 = 36; 6 \times 3 \times 2 = 36; 6 \times 2 \times 3 = 36; 2 \times 3 \times 6 = 36; 2 \times 6 \times 3 = 36$. After children have finished finding products for their number sentences, have them compare and discuss results. They should notice that each product is the same regardless of the order of the factors.

As time permits, have children continue to generate factors and number sentences.

**NOTE** Children in *Third Grade Everyday Mathematics* are not expected to use the formal terms for these properties.

#### Planning Ahead

For Exploration C in Lesson 4-8, make fact platters from large, round pizza cardboards, poster boards, or construction paper. Cut a hole in the center. Divide the platter into 10 sectors and write the numbers 1 to 10—not in consecutive order. (*See page 286.*)