Multiplication Facts Practice

Objectives
To introduce the 50-facts test; and to provide practice with multiplication facts.

1 Teaching the Lesson

Key Concepts and Skills
- Rename a fraction as an equivalent fraction and as a percent. [Number and Numeration Goal 5]
- Solve multiplication facts. [Operations and Computation Goal 3]
- Identify and use patterns in the Multiplication/Division Facts Table. [Patterns, Functions, and Algebra Goal 1]

Key Vocabulary
percent

Materials
Math Journal 1, p. 58 and inside front cover
Math Masters, p. 410
slate • pen or colored pencil • base-10 blocks (optional)

2 Ongoing Learning & Practice

Playing Baseball Multiplication
Student Reference Book, pp. 231 and 232
Math Masters, p. 460
per partnership: 4 pennies or other markers, 2 six-sided dice, calculator, counters (optional) • transparency of Math Masters, p. 460 (optional)
Students practice multiplication facts.

Math Boxes 3-3
Math Journal 1, p. 59
Students practice and maintain skills through Math Box problems.

Ongoing Assessment: Recognizing Student Achievement

Study Link 3-3
Math Masters, p. 78
Students practice and maintain skills through Study Link activities.

3 Differentiation Options

READINESS
Exploring Skip-Count Patterns on the Hundreds Grid
Math Masters, p. 79
highlighter, colored pencil, or crayon
Students skip count on a hundreds grid to identify patterns.

ENRICHMENT
Calculating Combinations
Math Masters, p. 80
Students apply multiplication facts and patterns to solve a combinations problem.

EXTRA PRACTICE
Exploring Prime and Composite Numbers
Math Masters, pp. 77 and 403
Students use rectangular arrays to investigate prime and composite numbers.

EXTRA PRACTICE
Playing Multiplication Top-It
Student Reference Book, p. 264
Math Masters, p. 506
4 each of number cards 1–10 (from the Everything Math Deck, if available)
Students practice multiplication facts.

Additional Information
Students take and score a practice 50-facts test. They will take a real test in Lesson 3+4. After that, the test will be offered as an optional Part 3 Extra Practice activity about once per unit. Four versions of the test are supplied on Math Masters, pages 410–413.


Lesson 3-3 169
Getting Started

Mental Math and Reflexes

Pose multiplication facts and extended facts.

Suggestions:

- \(3 \times 2 = 6\)
- \(7 \times 5 = 35\)
- \(40 \times 6 = 240\)
- \(5 \times 4 = 20\)
- \(8 \times 4 = 32\)
- \(9 \times 5 = 45\)
- \(9 \times 6 = 54\)
- \(40 \times 70 = 2,800\)
- \(6 \times 6 = 36\)
- \(8 \times 7 = 56\)
- \(80 \times 50 = 4,000\)

Math Message

Find the 9s multiplication facts in the Multiplication/Division Facts Table on the inside front cover of your journal.

What patterns do you see? Write about them at the top of journal page 58.

Study Link 3-2 Follow-Up

Have students determine which factors of 36 are prime.

Math Message Follow-Up

(Math Journal 1, p. 58; inside front cover)

Have students share their observations about the 9s multiplication facts. These might include the following:

- The sum of the two digits in a 9s product is 9. For example, \(9 \times 7 = 63\) and \(6 + 3 = 9\).
- As you review the 9s facts in order, the 10s digit increases by 1, and the 1s digit decreases by 1.
- To find 9 times a number, find 10 times the number, and then subtract the original number from the result. For example, to find \(9 \times 8\), think \(10 \times 8 = 80\) and \(80 - 8 = 72\).

Have students complete journal page 58 and discuss their findings.

Administering a Multiplication Facts Practice Test

(Math Masters, p. 410)

Discuss with students the importance of memorizing multiplication facts:

- It allows you to solve problems you encounter in everyday life. For example, to determine how many cupcakes are in 6 packages with 6 cupcakes per package, you use multiplication to solve the problem.
- It makes doing math much easier. If you have to stop and think what \(7 \times 8\) is when you are solving a problem, it slows you down. You are more likely to make a mistake or lose track of what you are doing.

170  Unit 3  Multiplication and Division; Number Sentences and Algebra
Tell students:
- Today you will practice taking a timed test on the multiplication facts.
- This test will help you measure your automaticity with the facts.
- In the next lesson, you will take a real test.
- Now take out a pencil and a pen or colored pencil.
- The tests will be passed out facedown.
- Do not turn the tests over until I give the signal to begin.

Next explain the procedure for the test.

**One-Minute Start**
- On my signal, turn the tests over and work for one minute in pencil, answering as many facts as possible. Do not skip any facts.
- Begin at the top of the first (left-most) column, work down that column, and continue at the top of the next column.

**Two-Minute Finish**
- After one minute, I will give another signal. At this signal, switch from pencil to pen or colored pencil. You will have two more minutes to complete as many facts as possible. Now you may skip facts.

**Stop**
- At the end of three minutes, I will say “Stop.” You must immediately put down your pen or colored pencil.
- Then you can use your pencil to fill in your name and the date.

**Scoring**
- In the one-minute part of the test, correct answers will be counted only up to the first fact missed. Answers that come after the first missed fact will not be counted. Therefore, do not skip any problems in this part of the test.
- The three-minute score will include all correct answers, which I will explain later.

Give each student a copy of 50-Facts Test 1 (*Math Masters*, page 410) facedown. Give the signal to begin, and follow the procedure described above.
Scoring the Practice Test

*(Math Masters, p. 410)*

Students will calculate two scores for the test: a one-minute score and a three-minute score. The one-minute score includes only correct answers in pencil up to the first fact answered incorrectly or skipped. The three-minute score includes all correct answers.

Read the facts and answers so that students can correct their work. In the pencil part of the test, they should draw a line above the first fact they answered incorrectly or skipped. In this first part, a skipped fact counts as incorrect.

Have students record the number of correct answers in one minute (the number of problems above the line drawn), and the total number of correct answers in three minutes, at the bottom of the test. Scores are first recorded as a fraction of the 50 facts—for example, 40 correct would be \( \frac{40}{50} \).

Next show students how to rename each score as a percent. Remind them that **percent** means “per hundred,” so they must rename the first fraction as a fraction whose denominator is 100. For example, the fraction \( \frac{40}{50} \) can be renamed as \( \frac{80}{100} \) which means that getting 40 correct answers out of 50 is equivalent to getting 80 correct answers out of 100—which is 80 percent (80%).

\[
\frac{40}{50} = \frac{80}{100} = 80\%
\]

Do a few sample conversions with the class. Then have students convert their own scores, writing the score as a fraction with a denominator of 100 and then as a percent.

Adjusting the Activity

Have students use base-10 blocks to illustrate 80 out of 100, or 80%. Students cover a flat with 8 longs or 80 cubes.
Ongoing Learning & Practice

Playing Baseball Multiplication
(Student Reference Book, pp. 231 and 232; Math Masters, p. 460)

Students play Baseball Multiplication to maintain automaticity with multiplication facts.

Adjusting the Activity
Have Multiplication/Division Facts Tables, counters to make arrays, and calculators for skip counting readily available. Refer students to game variations in the Student Reference Book, page 232.

Math Boxes 3-3
(Math Journal 1, p. 59)

Mixed Practice Math Boxes in this lesson are linked with Math Boxes in Lessons 3-1 and 3-5. The skill in Problem 6 previews Unit 4 content.

Writing/Reasoning Have students write a response to the following: Suppose the measurements given in Problems 4a–4d represent the lengths of four pieces of fabric Suma purchased at a craft store. What is the total number of feet of fabric she purchased? 19 feet  What is the total number of inches? 228 inches

Ongoing Assessment: Recognizing Student Achievement
Use Math Boxes, Problem 3 to assess students’ ability to estimate reasonable solutions for whole-number addition and subtraction problems. Students are making adequate progress if the number models for their ballpark estimates include “close-but-easier” numbers. Some students may be able to show more than one possible solution.

[Operations and Computation Goal 6]

Study Link 3-3
(Math Masters, p. 78)

Home Connection Students complete Multiplication/Division Fact Triangles. Each Fact Triangle gives the factors; students find each product. Students will also solve multiplicative comparison problems.

Teaching Master

Lesson 3-3 173
How many sundaes that have one scoop of whipped cream and one topping can Super Sweet sell? Sample answer: Multiply the number of ice-cream flavors by the number of toppings.

3. Exploring Skip-Count Patterns on the Hundreds Grid
(Math Masters, p. 79)

To provide a visual model for understanding multiplication facts, have students color skip-count patterns on the number grid. They then write about the patterns they see in the rows and columns.

Encourage students to think about how they might use skip-count patterns to solve multiplication facts.

EXTRA PRACTICE
To apply students’ understanding of multiplication, have them find all possible sundaes that can be made by combining one scoop of ice cream and one topping from a variety of choices.

When solving a combination problem such as this, students count the number of pairs that can be made from two or more groups of objects. Multiplication can be used to solve such problems. The factors are the number of objects in each group; the product is the number of combinations that is possible.

EXTRA PRACTICE
To extend students' work with factors, have them construct arrays for various numbers to determine if they are prime or composite.

EXTRA PRACTICE
To maintain automaticity with multiplication facts, have students play Multiplication Top-It. See Lesson 3-6 for additional information.

NOTE For facts practice through 12 x 12, have students include number cards 11 and 12 when playing Multiplication Top-It.

Math Masters, p. 80

NOTE For additional information about solving combination problems, see www.everydaymathonline.com.

Math Masters, p. 77

EXTRA PRACTICE
Playing Multiplication Top-It
(Student Reference Book, p. 264; Math Masters, p. 506)

Math Mastery, p. 77

Math Masters, p. 40
LESSON 3.3  Prime and Composite Numbers

You can use arrays to help you determine whether a counting number is prime or composite. If there is only one array for a number, the number has only two factors, so it is a prime number. If two or more arrays can be made for a number, then it is a composite number.

Example: Two different arrays can be made for 8.
1, 2, 4, and 8 are factors of 8.
8 is a composite number.

Example: Only one array can be made for 5.
1 and 5 are factors of 5.
5 is a prime number.

1. On centimeter grid paper, draw as many arrays as you can for each of the following numbers: 2, 3, 4, 6, 7, 11, 12, 15, 16.
Label each array with a number model and its turn-around fact, as shown in the examples above.

2. Use the arrays to decide if each number is prime or composite. Write the numbers on the appropriate line below.
Prime numbers: ____________________________

Composite numbers: ________________________

3. There are 20 prime numbers that are greater than 11, but less than 100. List them below.

_________________________________________
Complete these Multiplication/Division Fact Triangles.

1. 3 * , / 8
2. 9 * , / 6
3. 4 * , / 7
4. 8 * , / 2
5. 5 * , / 9
6. 6 * , / 3

Complete the statements.

7. _______ is 4 times as many as 10.
8. _______ is 5 times as many as 5.
9. _______ is 6 times as many as 8.
10. 63 is _______ times as many as 7.
11. _______ is 8 times as many as 8.
12. 42 is 7 times as many as _______.

Practice

13. Name 4 multiples of 7. _______, _______, _______, _______
14. List all the factors of 18. ________________________________
15. List the factors of 18 that are prime. _________
16. List all the factor pairs of 20.
    _______ and _______, _______ and _______, _______ and _______