Homeschool Sampler

Kindergarten
   Student Book B: Chapter 9, Lesson 3 2
   Teacher’s Edition B: Chapter 9, Lesson 3 3

1st Grade
   Student Book A: Chapter 2, Lesson 1 6

2nd Grade
   Student Book A: Chapter 4, Lesson 1 15

3rd Grade
   Student Book A: Chapter 4, Lesson 2 22

4th Grade
   Student Book A: Chapter 3, Lesson 1 26
   Teacher’s Edition A: Chapter 3, Lesson 1 35

5th Grade
   Student Book A: Chapter 2, Lesson 2 41
Lesson 3  Fewer and More

Color the extra cubes red.
Count and write how many more.

[Diagram showing cubes and a box to color]
Comparing Sets

Lesson 3
Fever and More

LESSON OBJECTIVES
• Compare sets in one-to-one correspondence.
• Understand few and fewer.
• Understand more.

MATERIALS
• Counters
• Salt (or sand)
• Number cubes
• Connecting cubes
• Red colored pencils

Vocabulary
fewer
few

DAY 1
Teacher’s Edition B, pp. 37–38
Big Book A, p. 24

DAY 2
Teacher’s Edition B, pp. 30–39
Student Book B, Part 1, p. 19

ACTIVITY 1
Investigate

Math Focus: Introduce fewer.
Resource: Big Book A, p. 24

Classroom Setup: Whole class, in pairs of the Big Book

1. Note that this activity relies on a page from Big Book A.
2. Ask children to sit so that everyone can see the Big Book.
3. Talk about number sizes to 10.
4. Refer to the picture of the vegetables. Count the number of each type of vegetable with the children.
5. Remind children that when a number is small, there are fewer objects than when the number is big.
ACTIVITY 2
Discover

Math Focus: Introduce few.
Materials: Counters, 15
Salt (or sand)
Classroom Setup: Whole class

Desk Practices: Few is a better word to use than less when talking about objects that can be counted. We say few (or) objects rather than less objects. Use less to refer to objects that you cannot count, for example, less sugar, less rice, and so on.

1. Invite children to stand around the table.
2. Place two mounds of salt on the table, one smaller than the other.
3. Point to the smaller mound and say: There is less salt here.
4. Place 3 counters on the table.
5. Say: There are a few counters here.
6. Place a group of 5 counters on the table.
7. Point to the group of 5 counters and say: 5 counters are fewer than 3 counters.
8. Vary the number of counters within each group. Then, ask children which group has fewer counters.
9. Math Talk: Encourage children to state the comparison when responding. For example: That group, because 1 counter is fewer than 5 counters.
10. Remind children that when a number is small, there are fewer objects than when the number is big.

ACTIVITY 3
Explore

Math Focus: Compare two number trains.
Materials: Number cubes, 1 (one with “5” and “6” covered)
Connecting cubes, 20 per pair
Classroom Setup: Children work in pairs.

1. Distribute connecting cubes to the children.
2. Toss the uncovered number cube.
3. Ask children to link that number of cubes into a tower.
4. Repeat several times starting a new tower each time.
5. Next, toss both number cubes, first one and then the other.
6. After the first number cube has been tossed, children form a tower of cubes according to the number on the number cube.
7. After the second number cube has been tossed, children form another tower of cubes according to the total number on both number cubes.
8. Talk about which tower has more cubes and which tower has fewer cubes. (The second tower has more cubes because it is the total of the numbers shown on both number cubes. The first tower has fewer cubes because it is only the number shown on the first number cube.)
10. Remind children that when a number is small, there are fewer objects than when the number is big.
ACTIVITY 9

Apply

Math Focus: Compare two numbers by comparing two sets.

Resource: Student Book B, Part 1, p. 19
Materials: Red colored pencils, 1 per child

Classroom Setup: Children work independently.

1. Children compare the cubes in each tower and decide which tower has more cubes.
2. Then, they color these extra cubes red and write the number of extra cubes in the box.
3. Encourage children to compare the towers in one-to-one correspondence (side by side), rather than count the number of cubes in each tower.
4. Check that children color the excess cubes at the top of the tower, and not at the bottom. Use the work being done by the furry as a model.
CHAPTER 2: Number Bonds

Kittens, kittens, cute little kittens,
How I love them so!
Seven on the inside,
Three on the outside,
Each dressed up in a bow!

Lesson 1: Making Number Bonds

How many kittens are there?

7

3

Number bonds can be used to show parts and whole.
Recall Prior Knowledge

Counting
There are 5 apples.

1 2 3 4 5

This is a number train of 4 apples.

Quick Check
What is the number? Count.

1 2 3

2 7
LESSON 1
Making Number Bonds

Lesson Objectives
• Use connecting cubes or a math balance to find number bonds.
• Find different number bonds for numbers to 10.

You can make number bonds with 🔧.
You can use a number train to make number bonds.

Sam put 🟢 into two parts.

part

How many are in each part?

3 and 1 make 4. This picture shows a number bond.
**Hands-On Activity**

Use 🌟.

What other numbers make 4?

1. 0 and 4 make 4.

2. 2 and 2 make 4.

What numbers make 5?

2. 5, 0, and 5 make 5.

5, 1, and 4 make 5.

5, 2, and 3 make 5.
You can make number bonds with a math balance.

4 and 3 make 7.

Hands-On Activity

What other numbers make 7? Use a math balance to help you.

??

??

2 5

6 1

7 0
Let’s Practice

Make number bonds for these numbers. Use or a math balance to help you.

1

\[
\begin{array}{c}
6 \quad 0 \\ 6 \\ \_ \\
6 \\
\end{array}
\]

\[
\begin{array}{c}
6 \quad 1 \\ 5 \\
6 \\
\_ \\
\end{array}
\]

\[
\begin{array}{c}
6 \quad 2 \\ 3 \\
6 \\
\_ \\
\end{array}
\]

\[
\begin{array}{c}
6 \quad 3 \\ 3 \\
6 \\
\_ \\
\end{array}
\]

Accept 0 and 8; 1 and 7; 2 and 6; 3 and 5; 4 and 4.

2

3

Accept 0 and 9; 1 and 8; 2 and 7; 3 and 6; 4 and 5.

ON YOUR OWN

Go to Workbook A: Practice 1 to 3, pages 21-30

Lesson 1 Making Number Bonds 33
Look at the picture. Make two number bonds.

Answers vary.

1 red stool and 5 blue stools make 6 stools.
Let’s Explore!

Use 🎲 or a math balance to help you.

1. Find three numbers that make 9.

   ![Balance Diagram]

   4
   9
   3
   2

2. Show two more ways to do this.

   Answers vary.
   Sample: 3, 3, and 3; 5, 2, and 2

3. Find three numbers that make 10.
   Show two more ways to do this.
   Answers vary.
   Sample: 1, 2, and 7; 2, 3, and 5
Let’s Explore!

Use 🌽.

1. Put some 🌽 and 🌽 together to make a number train. Now add some 🌽 to your number train. Make sure your number train has 10 or less 🌽.

2. Count the total number of 🌽 and 🌽. Answers vary. Count the number of 🌽. Answers vary. Add the total number of 🌽 and 🌽 to the number of 🌽. What number do you get? Answers vary.

3. Count the total number of 🌽 and 🌽. Answers vary. Count the number of 🌽. Answers vary. Add the number of 🌽 to the total number of 🌽 and 🌽. What number do you get? Answers vary.

Did you get the same number for 1 and 3? Yes.
Choose different numbers of 🌽, 🌽, and 🌽. Carry out 1, 2, and 3 again.
What do you notice? The number I get in 3 is always the same as that we get in 2.
Lesson 1
Using Part-Part-Whole in Addition and Subtraction

Lesson Objectives:
• Use bar models to solve addition and subtraction problems.
• Apply the inverse operations of addition and subtraction.

Learn
You can use bar models to help you add.

Mandy makes 10 granola bars. Aida makes 12 granola bars. How many granola bars do they make in all?

\[ 10 + 12 = 22 \]

They make 22 granola bars in all.

Check!

\[ 22 - 10 = 12 \]
\[ 22 - 12 = 10 \]
The answer is correct.
Guided Practice

Find the missing numbers. Use the bar model to help you.

1. Helen puts 14 breadsticks in a basket. Her friend puts 17 breadsticks in the basket. How many breadsticks are in the basket?

\[ 14 + 17 = 31 \]
There are 31 breadsticks in the basket.

Check!

\[ 31 - 17 = 14 \]
\[ 31 - 14 = 17 \]
Is the answer correct?
You can use bar models to help you subtract.

Will buys 24 eggs.
He breaks 7 eggs.
How many eggs do not break?

24 - 7 = 17

17 eggs do not break.

Check!

17 + 7 = 24
The answer is correct.
Guided Practice
Find the missing numbers. Use the bar model to help you.

2 The second grade class has a new aquarium. There are 21 fish in it. 15 fish were given by families. The rest were bought by the school. How many fish did the school buy?

\[ 21 - 15 = 6 \]

The school bought 6 fish.

Check!
\[ 15 + 6 = 21 \]
Is the answer correct?
Hands-On Activity

1. Write a favorite name, a number less than 20, and the name of a favorite toy on three pieces of paper. Your classmates will do the same.

2. Your teacher has three bags. They are labeled as shown. Drop each piece of paper into the correct bag.

3. Pick one name, one toy and two numbers from the bags.

4. Write a real-world problem using the words and numbers that you picked.
Grade 2

**Guided Practice**

Solve.
Use bar models to help you.

3. The library spends $225 on books.
   It has $78 left to spend.
   How much does the library have at first? $303

4. The art teacher has $74.5.
   She buys paint supplies for $257.
   She spends the rest of the money on drawing supplies.
   How much do the drawing supplies cost? $488
Let's Practice

Solve.
Draw bar models to help you.

1. Kevin scores 78 points in the first game he bowls.
   He scores 85 points in the second game.
   How many points does Kevin score for both games? 163 points

2. There are 147 fish in a pond.
   49 of them are black.
   The rest are orange.
   How many fish are orange? 98 fish

3. 98 boys sign up for a school camp.
   154 girls sign up for the camp also.
   How many children sign up for the camp in all? 252 children

4. Jordan and Ling have 472 trading cards.
   Ling has 178 trading cards.
   How many trading cards does Jordan have? 294 trading cards

5. A bookstore has 179 chapter books.
   It has 243 picture books.
   How many chapter and picture books does the bookstore have? 422 books

6. Lee has 528 United States and Singapore stamps.
   He has 249 United States stamps.
   How many Singapore stamps does he have?
   279 Singapore stamps

See Additional Answers

102  Chapter 4  Using Bar Models: Addition and Subtraction
Lesson 4.2
Subtraction with Regrouping in Hundreds and Thousands

Lesson Objective
• Use base-ten blocks to subtract with regrouping.

Vocabulary
regroup

Learn
Use base-ten blocks and a place-value chart to subtract with regrouping.

3,249 - 1,926 = ?

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>3 2 4 9</td>
<td>1 9 2 6</td>
<td>3 3 3</td>
<td></td>
</tr>
</tbody>
</table>

Step 1
Subtract the ones.

9 ones - 6 ones = 3 ones

Step 2
Subtract the tens.

4 tens - 2 tens = 2 tens

Chapter 4 Subtraction up to 10,000
Lesson 4.2  Subtraction with Regrouping in Hundreds and Thousands

3,249
- 1,926
= 23

9 hundreds cannot be subtracted from 2 hundreds. So, regroup the thousands and hundreds.

Regroup.
3 thousands 2 hundreds = 2 thousands 12 hundreds

Continued on next page.
Step 3
Subtract the hundreds.

\[
\begin{array}{c}
3,249 \\
\underline{-1,926} \\
323
\end{array}
\]

12 hundreds – 9 hundreds = 3 hundreds

Step 4
Subtract the thousands.

\[
\begin{array}{c}
3,249 \\
\underline{-1,926} \\
1,323
\end{array}
\]

2 thousands – 1 thousand = 1 thousand

When 1,926 is subtracted from 3,249, the difference is 1,323.

Check!
If 3,249 – 1,926 = 1,323, then 1,323 + 1,926 should equal 3,249. The answer is correct.
Guided Practice

Regroup. Find the missing numbers.

1. 7 thousands 3 hundreds = 6 thousands ___ hundreds
2. 4 thousands 1 hundred - 2 thousands 8 hundreds
   = 3 thousands ___ hundreds - 2 thousands 8 hundreds
   = 1 thousand ___ hundreds

Subtract. Use base-ten blocks to help you.

3. \[ \begin{array}{c}
       6,200 \\
       - 800 \\
     \end{array} \]
4. \[ \begin{array}{c}
       5,126 \\
       - 3,412 \\
     \end{array} \]
5. \[ \begin{array}{c}
       8,415 \\
       - 6,705 \\
     \end{array} \]

Let's Practice

Find the difference. Use base-ten blocks to help you.

1. The difference between 4,600 and 2,800 is ___.
2. The difference between 5,678 and 742 is ___.
3. The difference between 5,523 and 7,243 is ___.

Subtract.

4. \[ \begin{array}{c}
       5,221 \\
       - 3,410 \\
     \end{array} \]
5. \[ \begin{array}{c}
       8,735 \\
       - 2,812 \\
     \end{array} \]

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Lesson 3.1 Multiplying by a 1-Digit Number

Lesson Objective
• Use different methods to multiply up to 4-digit numbers by 1-digit numbers, with or without regrouping.

Learn
Represent numbers using place-value charts.
213 can be represented in these ways.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

213 can be represented in these ways.

<table>
<thead>
<tr>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Lesson 3.1 Multiplying by a 1-Digit Number 77
Model multiplication with regrouping in thousands, hundreds, tens, and ones.

Roy’s Market sold 2,476 oranges. Ana’s Market sold 3 times as many oranges as Roy’s Market. How many oranges did Ana’s Market sell?

\[2,476 \times 3 = ?\]

**Step 1** Multiply the ones by 3.

6 ones \( \times 3 = 18 \) ones

= 1 ten 8 ones

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Step 2** Multiply the tens by 3.

7 tens \( \times 3 = 21 \) tens

= 2 hundreds 1 ten

Add the tens.

2 hundreds 1 ten + 1 ten = 2 hundreds 2 tens

<table>
<thead>
<tr>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Math in Focus Sample Pages. Copyright © Houghton Mifflin Harcourt Publishers. All rights reserved.
Step 3  Multiply the hundreds by 3.
4 hundreds \times 3 = 12 hundreds
= 1 thousand 2 hundreds

Add the hundreds.
1 thousand 2 hundreds + 2 hundreds
= 1 thousand 4 hundreds

Step 4  Multiply the thousands by 3.
2 thousands \times 3 = 6 thousands
Add the thousands.
6 thousands + 1 thousand = 7 thousands

Ana's Market sold 7,428 oranges.

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Guided Practice
.Find the missing numbers in each step.

1. The next month, Roy’s Market sold 6,139 oranges. Ana’s Market sold 9 times as many oranges as Roy’s Market. How many oranges did Ana’s Market sell?

\[ 6,139 \times 9 = ? \]

**Step 1**
9 ones \( \times 9 = 81 \) ones
\[ \begin{array}{c}
\text{9 tens} \\
\text{1 one}
\end{array} \]

**Step 2**
3 tens \( \times 9 = 27 \) tens
\[ \begin{array}{c}
\text{2 hundreds} \\
\text{7 tens}
\end{array} \]
Add the tens.
\[ \begin{array}{c}
\text{8 hundreds} \\
\text{3 tens} + \text{7 tens}
\end{array} \]
\[ \begin{array}{c}
\text{8 hundred} \\
\text{3 tens} + \text{7 tens}
\end{array} \]

**Step 3**
1 hundred \( \times 9 = 9 \) hundreds
Add the hundreds.
\[ \begin{array}{c}
\text{3 hundreds} + \text{8 hundreds}
\end{array} \]
\[ \begin{array}{c}
\text{3 hundred} + \text{8 hundreds}
\end{array} \]

Chapter 3 Whole Number Multiplication and Division
Step 4
6 thousands \times 9 = 54 thousands
Add the thousands.
\[ \text{thousands} + \text{thousands} = \text{thousands} \]
Ana's Market sold 55,251 oranges.

Multiply. Use place-value charts to help you.

\[
\begin{array}{c}
2 & 1 & 2 & 6 \\
\times & 4 \\
\end{array}
\quad
\begin{array}{c}
3 & 2 & 7 & 8 \\
\times & 7 \\
\end{array}
\quad
\begin{array}{c}
4 & 4 & 7 & 1 & 6 \\
\times & 5 \\
\end{array}
\]

Learn
Multiply using the place value of each digit.

\[
2,147 \times 4 = ?
\]
\[
\begin{array}{c}
2,147 \\
\times & 4 \\
\hline
& 8,588 \\
\end{array}
\quad
\begin{array}{c}
7 \times 4 \\
& 28 \\
\end{array}
\quad
\begin{array}{c}
40 \times 4 \\
& 160 \\
\end{array}
\quad
\begin{array}{c}
100 \times 4 \\
& 400 \\
\end{array}
\quad
\begin{array}{c}
2,000 \times 4 \\
& 8,000 \\
\end{array}
\]

Guided Practice
Multiply using the method shown above.

\[
\begin{array}{c}
5 & 6 & 7 & 4 \\
\times & 5 \\
\end{array}
\quad
\begin{array}{c}
6 & 8 & 0 & 1 & 2 \\
\times & 9 \\
\end{array}
\quad
\begin{array}{c}
7 & 9 & 0 & 0 & 9 \\
\times & 9 \\
\end{array}
\]
**Roll and Multiply!**

**Players:** 2  
**Materials:**  
- Chip models  
- Number cubes

1. Player 1 tosses the number cube four times to get a 4-digit number, for example 5,421.

2. Player 2 tosses the number cube once to get a 1-digit number, for example 6.

3. Player 1 uses the chip model (shown on pages 78 and 79) to multiply the 4-digit number by the 1-digit number.

4. Then Player 1 writes the answer as shown in the example.

**Example**

<table>
<thead>
<tr>
<th>4-Digit Number</th>
<th>1-Digit Number</th>
<th>Product</th>
</tr>
</thead>
<tbody>
<tr>
<td>5,421</td>
<td>6</td>
<td>5,421 × 6 = 32,526</td>
</tr>
</tbody>
</table>

5. Player 2 checks the answer. Player 1 gets one point if the answer is correct.

6. Take turns writing the product and checking the answer. Play three rounds.

*The player with the higher score wins!*
Example
Look at the steps for multiplying a 3-digit number by a 1-digit number.

\[
\begin{array}{c}
13 \\
215 \\
\times \\
7 \\
\hline
1505
\end{array}
\]

\textbf{Step 1}
Multiply the ones by 7.
5 ones \times 7 = 35 ones
Regroup the ones.
35 ones = 3 tens 5 ones

\textbf{Step 2}
Multiply the tens by 7.
1 ten \times 7 = 7 tens
Add the tens.
7 tens + 3 tens = 10 tens
Regroup the tens.
10 tens = 1 hundred

\textbf{Step 3}
Multiply the hundreds by 7.
2 hundreds \times 7 = 14 hundreds
Add the hundreds.
14 hundreds + 1 hundred = 15 hundreds
Regroup the hundreds.
15 hundreds = 1 thousand 5 hundreds
The product is 1,505.

What are the steps to find the product of 6,875 and 3?
Let's Explore!

Three students completed these multiplication problems. Find the errors.

1 \[ \frac{1345}{8} \times \frac{8}{8,620} \]
2 \[ \frac{673}{3} \times \frac{3}{18,219} \]
3 \[ \frac{1036}{5} \times \frac{5}{5,580} \]

Discuss with your classmates some common errors that students make in multiplication.

Let's Practice

Multiply and find the missing numbers.

1 \[ 7 \text{ ones} \times 4 = \underline{\quad} \text{ ones} \]
\[ = \underline{\quad} \text{ tens} \underline{\quad} \text{ ones} \]

2 \[ 8 \text{ tens} \times 5 = \underline{\quad} \text{ tens} \]
\[ = \underline{\quad} \text{ hundreds} \underline{\quad} \text{ tens} \]

3 \[ 6 \text{ hundreds} \times 3 = \underline{\quad} \text{ hundreds} \]
\[ = \underline{\quad} \text{ thousand} \underline{\quad} \text{ hundreds} \]
Multiply and find the missing numbers.

4 9 thousands $\times 2 = \underline{\hspace{2cm}}$ thousands  
= \underline{\hspace{2cm}}$ ten thousand$ \underline{\hspace{2cm}}$ thousands  
\text{9,000} \times 2 \underline{\hspace{2cm}}$

Multiply.

5 $8 \times 3 = \underline{\hspace{2cm}}$

6 $80 \times 3 = \underline{\hspace{2cm}}$

7 $800 \times 3 = \underline{\hspace{2cm}}$

8 $8,000 \times 3 = \underline{\hspace{2cm}}$

Multiply.

9 \begin{array}{c}
104 \\
\times 5
\end{array}

10 \begin{array}{c}
754 \\
\times 3
\end{array}

11 \begin{array}{c}
217 \\
\times 8
\end{array}

12 \begin{array}{c}
9,110 \\
\times 8
\end{array}

13 \begin{array}{c}
1,026 \\
\times 8
\end{array}

14 \begin{array}{c}
2,307 \\
\times 3
\end{array}

15 \begin{array}{c}
4,635 \\
\times 7
\end{array}

16 \begin{array}{c}
8,319 \\
\times 8
\end{array}

\text{ON YOUR OWN}

\text{Go to Workbook A: Practice 1, pages 41-44}

Lesson 3.1 Multiplying by a 1-Digit Number
Chapter 3

3.1 Multiplying by a 1-Digit Number

Lesson Objective:
- Use different methods to multiply up to 4-digit numbers by 1-digit numbers, with or without regrouping.

Technology Resources:
- Math in Focus eBook
- Math in Focus Teaching Resources CD
- Math in Focus Virtual Manipulatives

Materials:
- 1 number cube per pair
- base-ten blocks for the teacher
- place-value chips per pair and for the teacher
- Place-Value Chart (TR01) per pair and for the teacher

Day 1
Student Book 4A, pp. 77–81

Day 2
Student Book 4A, pp. 81–85
Workbook 4A, pp. 41–44

Differentiation Resources:
- Reteach 4A, pp. 39–40
- Extra Practice 4A, pp. 23–24

5-minute Warm Up

Have students recall multiplying a 2-digit number by a 1-digit number. Working in pairs, one partner states a multiplication problem involving a 2-digit by 1-digit number, and the other partner finds the product. Have students switch roles and repeat. This activity prepares them for more multiplication exercises in this chapter.

Represent Numbers Using Place-Value Charts

Students learn to represent numbers using place-value charts.

- Have students look at the example on the page. Use a copy of the Place-Value Chart (TR01) for demonstration. Explain and show students how base-ten blocks, place-value chips, and numerals can be used to represent numbers on a place-value chart.

Chapter 3: Lesson 3.1 77
Model Multiplication With Regrouping in Thousands, Hundreds, Tens, and Ones (pages 78 and 79)

Students use place-value charts to multiply up to 4-digit numbers by 1-digit numbers with regrouping.

- Using the given example, show students the vertical form for multiplying a 4-digit number by a 1-digit number. Explain that they should multiply from right to left and regroup after multiplying the multiplicand by the multiplier. Note: Students are not introduced to the terms multiplicand and multiplier.
- Step 1: Have students multiply the ones. Regroup the tens on the place-value chart. Then write the product in vertical form.
- Step 2: Have students multiply the tens. Show how to regroup the hundreds on the place-value chart. Explain that 7 tens \( \times 3 = 21 \) tens = 2 hundreds 1 ten. Add the tens: 2 hundreds 1 ten + 1 tens = 2 hundreds 2 tens. Then write the product in vertical form.
- Repeat for hundreds and thousands in Steps 3 and 4.

Problem of the Lesson

Explain how you can solve these problems by addition.

\[ a. 4 \times 3 \]
\[ b. 5 \times 6 \]
\[ c. 2 \times 9 \]

Solution:

Multiplication is repeated addition. So, add each number by the number of times as indicated by the other number.

Answers:

\[ a. 3 + 3 + 3 + 3 = 12 \]
\[ b. 6 + 6 + 6 + 6 + 6 = 30 \]
\[ c. 9 + 9 = 18 \]

Differentiated Instruction

English Language Learners

Help students participate in the Let’s Explore discussion on page 84 by asking yes/no questions. Ask: Did the student who did the first problem correctly add the thousands? (No) Did the student who did Problem 3 multiply the wrong digits? (Yes)
Check for Understanding

Guided Practice (pages 80 and 81)

1. Review the procedure for multiplication with regrouping. Guide students to first multiply the digits in each place before regrouping. Remind students to add the tens that were regrouped from the ones after multiplying the digit in the tens place.

2. to 4. Guide students to use the same process of multiplication and regrouping they have learned.

Day 2 Teach

Learn

Multiply Using the Place Value of Each Digit (page 81)

• Show and explain the alternative method of multiplying a 4-digit number by a 1-digit number.

• Ask students to identify the value of each digit before multiplying: $2,147 = 2,000 + 100 + 40 + 7$. Have them multiply each value with the multiplier, starting from the ones. Then add the products.

• This method does not involve regrouping initially. Students may need to regroup when adding products.

• Work through another example using this method, for example, $1,532 \times 7$.

Best Practices

List the two multiplication methods with their corresponding pages on the board: Using Place-Value Charts, pages 77 to 79 and Using Place Value of Each Digit, page 81. Have students refer to these pages when solving problems throughout the lesson. Encourage discussion about which method students prefer and why.

Guided Practice (page 81)

5. to 7. Reinforce students’ understanding of the vertical form and have them use both methods to find the products.
Roll and Multiply!

- This activity reinforces understanding of the conventional multiplication algorithm.
- Explain the steps to students and have students play the game in pairs. Remind them to use the chip model and regroup where necessary. Tell them that when checking answers, they may wish to use either method.

For Advanced Learners
Students are to write a multiplication problem: 4-digit $\times$ 1-digit. They will reveal the 4-digit number and the answer to their partner. The partner has to guess the 1-digit number. Students take turns to reveal and guess the numbers.

READING AND WRITING MATH

Math Journal (page 83)

Through this activity, students reflect on and express their understanding of the multiplication procedure by listing the steps.
- Review the steps for multiplying a 3-digit number by a 1-digit number, as shown on page 83.
- Have students list the steps for multiplying a 4-digit number by a 1-digit number using 6,875 $\times$ 3 as an example. See Additional Answers, pages T50-T51.
Grade 4

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Practice and Apply
Workbook pages for Chapter 3, Lesson 3.1

Whole Number Multiplication and Division

Practice 1: Multiplying by a 1-Digit Number

1. Solve: 2 rows x 1 = __ rows
   Answer: 2

2. Solve: 6 rows x 4 = __ rows
   Answer: 24

3. Solve: 0 rows x 6 = __ rows
   Answer: 0

4. Solve: 0 wondering x 4 = __ rows
   Answer: 0

Multiply 9,984 by 7 and find the missing numbers.

5. Solve: 9,984 rows x 7 = __ rows
   Answer: 69,888

6. Solve: 9,984 hundreds x 7 = __ hundreds
   Answer: 69,888

7. Solve: 9,984 thousands x 7 = __ thousands
   Answer: 69,888

Workbook A p. 41

Workbook A p. 42

Workbook A p. 43

Workbook A p. 44

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Lesson 2.2

Multiplying by Tens, Hundreds, or Thousands

Lesson Objectives
- Multiply numbers by 10, 100, or 1,000 using patterns.
- Multiply numbers up to 4 digits by multiples of 10, 100, or 1,000.
- Use rounding to estimate products.

Learn

Look for a pattern in the products when 10 is a factor.

\[ 7 \times 10 = 70 \]
\[ 9 \times 10 = 90 \]
\[ 10 \times 10 = 100 \]
\[ 12 \times 10 = 120 \]
Look at the place-value chart.

<table>
<thead>
<tr>
<th></th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>7</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>7 x 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>9 x 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>10 x 10</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>12 x 10</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

What is the pattern when each number is multiplied by 10? Each digit moves one place to the left when the number is multiplied by 10.
### Hands-On Activity

Copy and complete the table.

<table>
<thead>
<tr>
<th></th>
<th>Ten Thousands</th>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>231</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td></td>
<td></td>
</tr>
<tr>
<td>231 \times 10</td>
<td>2</td>
<td>3</td>
<td>1</td>
<td>0</td>
<td></td>
</tr>
<tr>
<td>2,345</td>
<td>2</td>
<td>3</td>
<td>4</td>
<td>5</td>
<td></td>
</tr>
<tr>
<td>2,345 \times 10</td>
<td></td>
<td></td>
<td>2</td>
<td>3</td>
<td></td>
</tr>
<tr>
<td>4,108</td>
<td>4</td>
<td>1</td>
<td>0</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>4,108 \times 10</td>
<td></td>
<td></td>
<td>4</td>
<td>1</td>
<td></td>
</tr>
</tbody>
</table>

Write the products.

1. \(231 \times 10\)
2. \(2,345 \times 10\)
3. \(4,108 \times 10\)

What rule can you use when you multiply a whole number by 10?

### Guided Practice

Multiply.

1. \(60 \times 10\)
2. \(135 \times 10\)
3. \(503 \times 10\)
4. \(2,876 \times 10\)
5. \(6,082 \times 10\)
6. \(6,010 \times 10\)
Find the missing factors.

7. \(8 \times \quad = 80\)

8. \(22 \times \quad = 220\)

9. \(\quad \times 10 = 5,280\)

10. \(\quad \times 10 = 74,600\)

Learn

Break apart a number to help you multiply by tens.

\[
\begin{array}{cccccccc}
& 20 & 20 & 20 & 20 & 20 & 20 \\
10 & 10 & 10 & 10 & 10 & 10 & 10
\end{array}
\]

\[6 \times 20 = 6 \times 2 \text{ tens} \]
\[= (6 \times 2) \times 10 \]
\[= 12 \times 10 \]
\[= 120\]

\[27 \times 30 = 27 \times 3 \text{ tens} \]
\[= (27 \times 3) \times 10 \]
\[= 81 \times 10 \]
\[= 810\]
Hands-On Activity
Copy and complete the table by multiplying each number by 6 and by 60. An example is shown.

<table>
<thead>
<tr>
<th></th>
<th>×6</th>
<th>×60</th>
</tr>
</thead>
<tbody>
<tr>
<td>42</td>
<td>252</td>
<td>2,520</td>
</tr>
<tr>
<td>65</td>
<td></td>
<td></td>
</tr>
<tr>
<td>861</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Look at the answers in the table. Find the missing numbers.
1. $42 \times 60 = (42 \times 6) \times \underline{60}$
2. $65 \times 60 = (65 \times \underline{6}) \times \underline{60}$
3. $861 \times 60 = (861 \times \underline{6}) \times \underline{60}$

Guided Practice
Find the missing numbers.
11. $62 \times 40 = (62 \times 4) \times 10$
   = $\underline{248} \times 10$
   = $\underline{2,480}$
12. $307 \times 80 = (307 \times \underline{8}) \times 10$
   = $\underline{2,456} \times 10$
   = $\underline{24,560}$
Multiply.

13. \(274 \times 50\)

14. \(1,970 \times 90\)

15. \(8,145 \times 40\)

Learn

Look for a pattern in the products when 100 or 1,000 is a factor.

\[
\begin{array}{cccccc}
100 & 100 & 100 & 100 & 100 \\
\end{array}
\]

\(5 \times 100 = 500\)

\[
\begin{array}{cccccc}
100 & 100 & 100 & 100 & 100 & 100 & 100 & 100 & 100 & 100 \\
\end{array}
\]

\(11 \times 100 = 1,100\)

\[
\begin{array}{cccccc}
1,000 & 1,000 & 1,000 & 1,000 & 1,000 \\
\end{array}
\]

\(5 \times 1,000 = 5,000\)

\[
\begin{array}{cccccc}
1,000 & 1,000 & 1,000 & 1,000 & 1,000 & 1,000 & 1,000 & 1,000 & 1,000 & 1,000 & 1,000 \\
\end{array}
\]

\(11 \times 1,000 = 11,000\)
Look at the place-value chart.

<table>
<thead>
<tr>
<th></th>
<th>Ten Thousands</th>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 x 100</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 x 100</td>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>5 x 1,000</td>
<td></td>
<td>5</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>11</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>11 x 1,000</td>
<td></td>
<td>11</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Each digit moves two places to the left when the number is multiplied by 100. Each digit moves three places to the left when the number is multiplied by 1,000.
Hands-On Activity

Copy and complete the table.

<table>
<thead>
<tr>
<th>Millions</th>
<th>Hundred Thousands</th>
<th>Ten Thousands</th>
<th>Thousands</th>
<th>Hundreds</th>
<th>Tens</th>
<th>Ones</th>
</tr>
</thead>
<tbody>
<tr>
<td>174</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>174 × 100</td>
<td></td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>174 × 1,000</td>
<td></td>
<td>1</td>
<td>7</td>
<td>4</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>3,298</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>3,298 × 100</td>
<td></td>
<td>3</td>
<td>2</td>
<td>9</td>
<td>8</td>
<td></td>
</tr>
<tr>
<td>3,298 × 1,000</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Write the products.

1. 174 × 100
2. 174 × 1,000
3. 3,298 × 100
4. 3,298 × 1,000

What rule can you use when you multiply a whole number by 100?

What rule can you use when you multiply a whole number by 1,000?
### Guided Practice

**Multiply.**

16. 27 × 100
17. 615 × 100
18. 9,670 × 100
19. 18 × 1,000
20. 487 × 1,000
21. 5,346 × 1,000

**Find the missing factors.**

22. 26 × [___] = 2,600
23. 195 × [___] = 195,000
24. [___] × 100 = 49,000
25. [___] × 1,000 = 168,000

### Learn

**Break apart a number to help you multiply by hundreds or thousands.**

\[7 \times 200 = 7 \times (2 \times 100) = (7 \times 2) \times 100 = 14 \times 100 = 1,400\]

\[67 \times 5,000 = 67 \times (5 \times 1,000) = (67 \times 5) \times 1,000 = 335 \times 1,000 = 335,000\]
Hands-On Activity

Copy and complete the table by multiplying each number by 7, 700 and 7,000. An example is shown.

<table>
<thead>
<tr>
<th></th>
<th>\times 7</th>
<th>\times 700</th>
<th>\times 7,000</th>
</tr>
</thead>
<tbody>
<tr>
<td>78</td>
<td>546</td>
<td>54,600</td>
<td>546,000</td>
</tr>
<tr>
<td>113</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>251</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Look at the answers in the table. Find the missing numbers.

1. \(78 \times 700 = (78 \times 7) \times \_\_\_\_\_\_\_\_\_
2. \(113 \times 700 = (113 \times \_\_\_\_\_\_) \times \_\_\_\_\_\_\_
3. \(251 \times 700 = (251 \times \_\_\_\_\_\_) \times \_\_\_\_\_\_\_
4. \(78 \times 7,000 = (78 \times 7) \times \_\_\_\_\_\_\_
5. \(113 \times 7,000 = (113 \times \_\_\_\_\_\_) \times \_\_\_\_\_\_\_
6. \(251 \times 7,000 = (251 \times \_\_\_\_\_\_) \times \_\_\_\_\_\_\_

Guided Practice

Find the missing numbers.

26. \(72 \times 400 = (72 \times 4) \times 100 = \_\_\_\_\_\_\_\_\_ \times 100 = \_\_\_\_\_\_\_\_\_\_

27. \(123 \times 700 = (123 \times \_\_\_\_\_\_) \times \_\_\_\_\_\_\_\_\_ \times 100 = \_\_\_\_\_\_\_\_\_\_\_

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Find the missing numbers.

28. \(6 \times 5,000 = (6 \times 5) \times 1,000\)
   \[\text{= } \boxed{30}\times 1,000\]
   \[\text{= } \boxed{30}\]

29. \(18 \times 6,000 = (18 \times \boxed{5}) \times \boxed{10}\)
   \[\text{= } \boxed{90}\times 1,000\]
   \[\text{= } \boxed{90}\]

Multiply.

30. \(81 \times 500\)
31. \(932 \times 800\)
32. \(6,455 \times 900\)
33. \(6,007 \times 800\)
34. \(73 \times 4,000\)
35. \(905 \times 8,000\)
36. \(654 \times 3,000\)
37. \(807 \times 9,000\)

Learn

Round factors to the nearest ten or hundred to estimate products.

Estimate the product of 632 and 26.
Round 632 to the nearest hundred.  
Round 26 to the nearest ten.  
632 rounds to 600, and 26 rounds to 30.  
\[600 \times 30 = (600 \times 3) \times 10\]
   \[= 1,800 \times 10\]
   \[= 18,000\]

The product is about 18,000.
Guided Practice

Estimate.

38 Estimate the product of 228 and 57.
Round 228 to the nearest hundred.
Round 57 to the nearest ten.
228 rounds to \( \underline{200} \), and 57 rounds to 60.
\[ \underline{200} \times 60 = (\underline{20} \times 6) \times 10 \]
\[ = \underline{20} \times 10 \]
\[ = \underline{200} \]

39 702 \( \times \) 15
40 27 \( \times \) 364
41 38 \( \times \) 246
42 851 \( \times \) 19
43 511 \( \times \) 62
44 35 \( \times \) 424

Round factors to the nearest ten or thousand to estimate products.

A museum gift shop sold 1,215 sets of dinosaur models.
There were 26 dinosaur models in each set.
Estimate the total number of dinosaur models the shop sold.

Round 1,215 to the nearest thousand.
Round 26 to the nearest ten.
1,215 rounds to 1,000, and 26 rounds to 30.
\[ 1,000 \times 30 = (1,000 \times 3) \times 10 \]
\[ = 3,000 \times 10 \]
\[ = 30,000 \]
The shop sold about 30,000 dinosaur models.
Guided Practice

Estimate.
45 Estimate the product of 1,238 and 56.
Round 1,238 to the nearest thousand.
Round 56 to the nearest ten.
1,238 rounds to 1,000, and 56 rounds to ___.
1,000 \times ___ = (1,000 \times ___) \times ___
= ___ \times ___
= ___

46 99 \times 38
47 67 \times 439

48 9,281 \times 32
49 2,065 \times 41

Let’s Practice

Multiply.
1 412 \times 10
2 792 \times 100
3 740 \times 1,000
4 703 \times 60
5 815 \times 700
6 169 \times 3,000

Estimate each product.
7 3,711 \times 9
8 2,087 \times 37
9 1,985 \times 302

Solve.
10 A factory produces 452 beads in 1 minute.
Estimate the number of beads the factory produces in 56 minutes.

Go to Workbook A: Practice 2, pages 29–36

Lesson 2.2 Multiplying by Tens, Hundreds, or Thousands