SESSION 3A.2

# Multiplying by "Small" Numbers

## Math Focus Points

- Estimating products of decimal numbers
- Multiplying decimals to hundredths through reasoning about place value and multiplication

| Today's Plan | | Materials |
|---|---|---|
| 1 ACTIVITY **Introducing Multiplying Decimals** | 15 MIN CLASS PAIRS | |
| 2 ACTIVITY **Multiplying Decimals** | 30 MIN INDIVIDUALS | • *Student Activity Book*, p. 69 or **C72, Multiplying Decimals** Make copies. (as needed) |
| 3 DISCUSSION **How Big Is the Answer?** | 15 MIN CLASS | • *Student Activity Book*, p. 69 or C72 (completed) |
| 4 SESSION FOLLOW-UP **Daily Practice** | | • *Student Activity Book*, p. 70 or **C73, Reasoning About Decimals** Make copies. (as needed)<br>• *Student Activity Book*, p. 71 or **C74, Powers of 10 and Multiplication** Make copies. (as needed) |

## Ten-Minute Math

***Practicing Place Value*** Say "twelve and five hundred nine thousandths," and have students practice writing the number. Make sure all students can read, write, and say this number correctly. Write the number on the board and ask students to write it in expanded notation. ($1 \times 10 + 2 \times 1 + 5 \times \frac{1}{10} + 9 \times \frac{1}{1{,}000}$) Ask students:

- What is 12.509 rounded to the nearest hundredth? *(12.51)* Nearest tenth? *(12.5)* Nearest one? *(13)*

After each answer, ask students to explain their reasoning and ask the class if everyone agrees. If time remains, repeat using 18.179, and ask students to round to the nearest hundredth, nearest one, and nearest ten.

15 MIN CLASS PAIRS

ACTIVITY

# 1 Introducing Multiplying Decimals

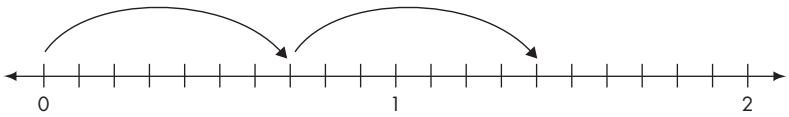
We're going to continue thinking about multiplying decimals. You're going to think about how the strategies you already know and use for multiplying whole numbers work, and how you might have to change or extend those ideas to multiply decimals.

Write the following equations on the board:

$2 \times 7 =$ $\qquad$ $2 \times 0.7 =$

Let's use running as a context for these problems. If Joshua ran 7 miles every day for two days, how far did he run? [Fill in 14 in the first equation on the board.] What if he ran 0.7 mile a day for 2 days? Do you think he ran more or less than 14 miles? How do you know? Did he run more or less than 2 miles? How do you know?

Let's think about what $2 \times 0.7$ would look like on a number line. [Draw a number line from 0 to 2, showing tenths.] The first day he ran 0.7 mile. How do I show that jump on the number line? Then he ran another 0.7 mile. How do I show that? What number are we at? *(1.4)*




Fill in 1.4 in the second equation on the board and ask students if the answer is reasonable.

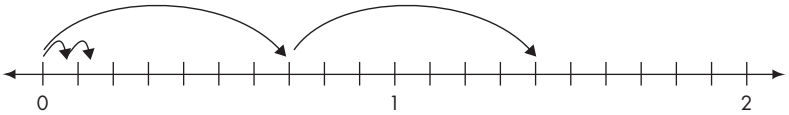
You said before that Joshua would run less than 2 miles, so does 1.4 miles seem reasonable?

Next, write $2 \times 0.07 =$ on the board.

Now suppose Joshua ran 0.07 mile a day for two days. Do you think he ran more or less than 1.4 miles? How do you know? Do you think he ran more or less than 1 mile? How do you know?

**What would 2 × 0.07 look like on the number line? [Show a jump of 0.07 for the first day. Then show another jump of 0.07 for the second day.] What number are we at? *(0.14)* Does this answer seem reasonable? Why or why not?**

Students may need help determining where 0.07 would be on the number line. If necessary, ask them if 0.07 is more or less than 0.1.




Fill in 0.14 in the third equation on the board. Ask students to look at the three equations and the number line on the board.

**What do you notice about these three equations? What do you already know about multiplication that helps us solve these problems, and what do you need to pay attention to?**

As students respond, ask others whether they agree or disagree and why.

**Students might say:**

"In all of the equations, 2 × 7 is still 14. But in the last two equations it's not 7 ones, it's seven tenths and seven hundredths. So the answers are smaller."

Write 32 × 0.8 = on the board.

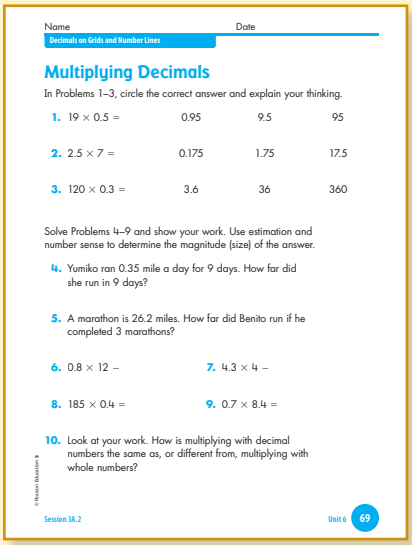
**Let's look at another problem. Let's stick with the running context. Joshua ran 0.8 mile for 32 days. Before you solve the problem, estimate the product. Do you think the answer will be more or less than 3.2? Than 32? Than 320? Talk to a neighbor.**

After students discuss this with a partner, ask for responses.

**Students might say:**

"I think it's going to be over 100, maybe even 200, because 30 × 8 = 240."

"I disagree. 0.8 is just a little less than 1, so Jose ran less than 1 mile every day. The answer should be less than 32, but not a lot less."



Name Date

Decimals on Grids and Number Lines

**Multiplying Decimals**

In Problems 1–3, circle the correct answer and explain your thinking.

1. 19 × 0.5 = 0.95 9.5 95
2. 2.5 × 7 = 0.175 1.75 17.5
3. 120 × 0.3 = 3.6 36 360

Solve Problems 4–9 and show your work. Use estimation and number sense to determine the magnitude (size) of the answer.

4. Yumiko ran 0.35 mile a day for 9 days. How far did she run in 9 days?
5. A marathon is 26.2 miles. How far did Benito run if he completed 3 marathons?
6. 0.8 × 12 =
7. 4.3 × 4 =
8. 185 × 0.4 =
9. 0.7 × 8.4 =
10. Look at your work. How is multiplying with decimal numbers the same as, or different from, multiplying with whole numbers?

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▲ **Student Activity Book, Unit 6, p. 69; Resource Masters, C72**

If it were 8 miles a day, how far did Joshua run? What's 32 × 8? *(256)* But it's not 8 miles a day. It's 0.8 mile. So you have to think about where the decimal point should go so the answer makes sense.

Write the following on the board:

32 × 0.8 = 2.56 25.6 256

Which of these is correct? Why?

**Students might say:**

"Eight tenths is a little smaller than 1. If he ran 0.8 mile every day for 32 days, the product is a little smaller than 32, so the answer is 25.6 miles."

## 2 ACTIVITY Multiplying Decimals

30 MIN INDIVIDUALS

You're going to solve some multiplication problems that involve decimals. Think about multiplication strategies you already know and use, and then think about where you have to put the decimal point so the size of your answer makes sense.

Have students complete *Student Activity Book* page 69 or C72. Then tell them they should be prepared to discuss Problems 8–10.

### ONGOING ASSESSMENT: Observing Students at Work

Students use multiplication strategies they already know, and reasoning, to solve multiplication problems with decimal numbers.

- **Do students use reasoning about the size of the numbers and multiplication to find the correct product?** (e.g., For Problem 3 on *Student Activity Book* page 69 or C72, are they thinking 0.3 is about $\frac{1}{3}$, so the answer to 120 × 0.3 should be around $\frac{1}{3}$ of 120, or 40?)
- **What multiplication strategies do students use?** Are they able to multiply correctly? Can they keep track of all the parts of the problem?

### DIFFERENTIATION: Supporting the Range of Learners

**Intervention** Give possible solutions for students who are still working on understanding decimal numbers, and ask them to explain their thinking. (e.g., For Problem 6 on *Student Activity Book* page 69 or C72, ask students if the answer is 0.96, 9.6, or 96 and what their thinking is.) Use the context of running or another context that might be more familiar for students.

**Extension** Students who need a challenge should be encouraged to solve the problems a second time using fraction notation and then compare the fraction and decimal notation. (e.g., Problem 6 would be represented as $\frac{8}{10} \times 12$.)

DISCUSSION

15 MIN CLASS

## 3 How Big Is the Answer?

### Math Focus Points for Discussion

- Estimating products of decimal numbers
- Multiplying decimals to hundredths through reasoning about place value and multiplication

Before the discussion begins, write the following solutions to Problem 8 from *Student Activity Book* page 69 or C72 on the board:

$100 \times 4 = 400$
$80 \times 4 = 320$
$5 \times 4 = 20$

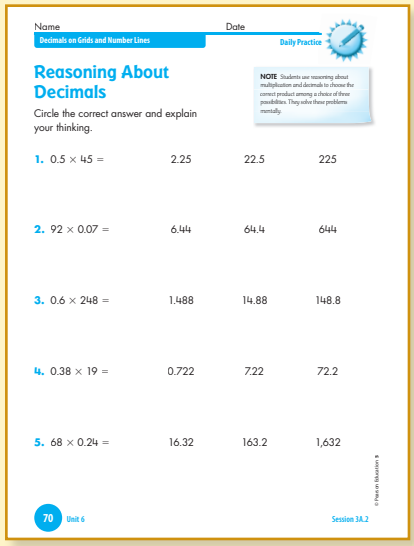
$400 + 340 = 740$

$$\begin{array}{r} {}^{3\,2}\phantom{0} \\ 185 \\ \times \quad 4 \\ \hline 740 \end{array}$$

$185 \times 0.4 =$

$185 \times 0.4 =$

We're going to start with Problem 8: $185 \times 0.4$. As I was walking around the room, I noticed most people started with one of the two strategies I've written on the board—multiplying by place, using 185 and 4 as whole numbers. Most of you said that $185 \times 0.4$ was either 74 or 740. Which one is correct? How do you know?



Name Date

Decimals on Grids and Number Lines — Daily Practice

**Reasoning About Decimals**

NOTE Students use reasoning about multiplication and decimals to choose the correct product among a choice of three possibilities. They solve these problems mentally.

Circle the correct answer and explain your thinking.

| | | | |
|---|---|---|---|
| 1. 0.5 × 45 = | 2.25 | 22.5 | 225 |
| 2. 92 × 0.07 = | 6.44 | 64.4 | 644 |
| 3. 0.6 × 248 = | 1.488 | 14.88 | 148.8 |
| 4. 0.38 × 19 = | 0.722 | 7.22 | 72.2 |
| 5. 68 × 0.24 = | 16.32 | 163.2 | 1,632 |



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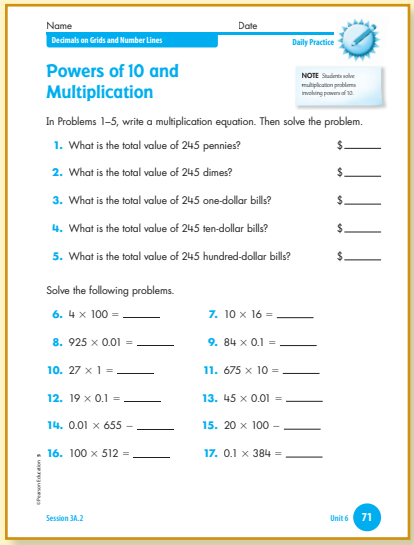
▲ **Student Activity Book, Unit 6, p. 70; Resource Masters, C73**



Name Date

Decimals on Grids and Number Lines — Daily Practice

**Powers of 10 and Multiplication**

NOTE Students solve multiplication problems involving powers of 10.

In Problems 1–5, write a multiplication equation. Then solve the problem.

1. What is the total value of 245 pennies? $ _____
2. What is the total value of 245 dimes? $ _____
3. What is the total value of 245 one-dollar bills? $ _____
4. What is the total value of 245 ten-dollar bills? $ _____
5. What is the total value of 245 hundred-dollar bills? $ _____

Solve the following problems.

| | |
|---|---|
| 6. 4 × 100 = _____ | 7. 10 × 16 = _____ |
| 8. 925 × 0.01 = _____ | 9. 84 × 0.1 = _____ |
| 10. 27 × 1 = _____ | 11. 675 × 10 = _____ |
| 12. 19 × 0.1 = _____ | 13. 45 × 0.01 = _____ |
| 14. 0.01 × 655 = _____ | 15. 20 × 100 = _____ |
| 16. 100 × 512 = _____ | 17. 0.1 × 384 = _____ |



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▲ **Student Activity Book, Unit 6, p. 71; Resource Masters, C74**

**Students might say:**

"It can't be 740. You're multiplying 185 times less than one half. Like if you had 185 things that each weighed 0.4 gram, no way could it be 740. It has to be 74. But I'm confused, because 74 doesn't have a decimal point in it."

If no student brings up the question about a decimal point, bring it up yourself.

[Talisha] brings up an interesting question. We don't use a decimal point when we write 74 because it's not necessary. How could we write 74 using a decimal point?

Accept student responses, which should include that 74 is equal to 74.0, 74.00, 74.000, and so on. Remind students that they did something similar in Investigation 2 when they subtracted decimals.

Let's look at Problem 9 from *Student Activity Book* page 69 or C72: 0.7 × 8.4 =. Again, most people multiplied 84 × 7 and got 588, but then I noticed some of you said 0.588, or 5.88, or 58.8. Which is correct? How do you know?

**Students might say:**

"At first this felt harder because both numbers were decimals. But then I realized I could think about it the same way. The answer should be less than 8.4, because 0.7 is less than one. And 0.7 is bigger than half, so the answer has to be at least bigger than 4. So it's 5.88."

I'm wondering what people wrote for the last question. How is multiplying with decimals the same as, or different from, multiplying whole numbers?

Accept student responses, asking if others in the class have questions and if they agree.

## 4 SESSION FOLLOW-UP
# Daily Practice

**Daily Practice:** For reinforcement of this unit's content, have students complete *Student Activity Book* 70 or C73. For ongoing review, have students complete *Student Activity Book* page 71 or C74.

SESSION 3A.3

# Multiplying Decimals

## Math Focus Points

- Estimating products of decimal numbers
- Multiplying decimals to hundredths through reasoning about place value and multiplication
- Writing a rule for multiplying decimal numbers

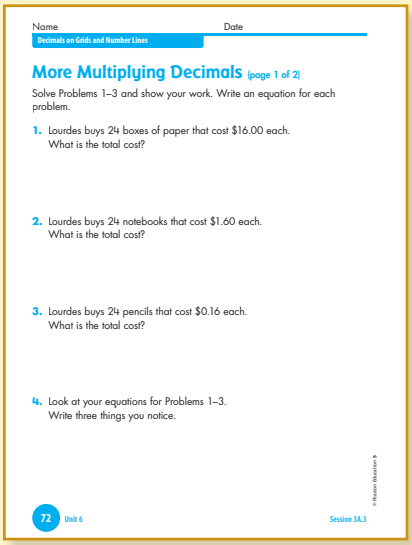
| Today's Plan | | Materials |
|---|---|---|
| 1 ACTIVITY **Decimal Multiplication** | 45 MIN, INDIVIDUALS, CLASS | • *Student Activity Book,* pp. 72–73 or **C75–C76, More Multiplying Decimals** Make copies. (as needed) |
| 2 DISCUSSION **Writing a Rule** | 15 MIN, CLASS | • *Student Activity Book,* p. 73 or C76 (completed) |
| 3 SESSION FOLLOW-UP **Daily Practice** | | • *Student Activity Book,* p. 74 or **C77, Solving Decimal Problems** Make copies. (as needed)<br>• *Student Activity Book,* p. 75 or **C78, Decimal Multiplication** Make copies. (as needed) |

## Ten-Minute Math

***Practicing Place Value*** **Write 873.75 on the board and have students practice saying the number. Make sure all students can read, write, and say this number correctly. Ask students to write it in expanded notation.** $(8 \times 100 + 7 \times 10 + 3 \times 1 + 7 \times \frac{1}{10} + 5 \times \frac{1}{100})$ **Ask students:**

- What is 873.75 rounded to the nearest tenth? *(873.8)* Nearest one? *(874)* Nearest 10? *(870)*

**After each answer, ask students to explain their reasoning and ask the class if everyone agrees. If time remains, repeat using 547.29 and ask students to round to the nearest tenth, ten, and hundred.**



Name Date

Decimals on Grids and Number Lines

**More Multiplying Decimals** (page 1 of 2)

Solve Problems 1–3 and show your work. Write an equation for each problem.

1. Lourdes buys 24 boxes of paper that cost $16.00 each. What is the total cost?

2. Lourdes buys 24 notebooks that cost $1.60 each. What is the total cost?

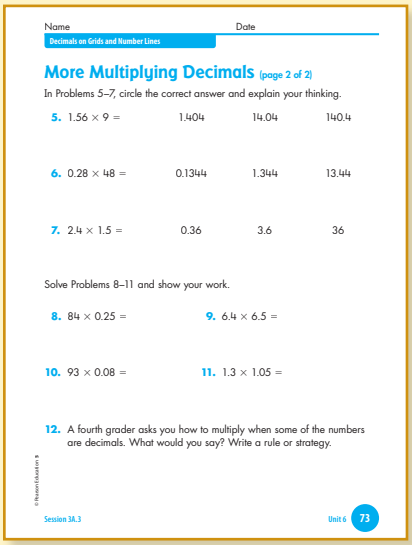
3. Lourdes buys 24 pencils that cost $0.16 each. What is the total cost?

4. Look at your equations for Problems 1–3. Write three things you notice.





▲ **Student Activity Book, Unit 6, p. 72; Resource Masters, C75**



Name Date

Decimals on Grids and Number Lines

**More Multiplying Decimals** (page 2 of 2)

In Problems 5–7, circle the correct answer and explain your thinking.

| | | | |
|---|---|---|---|
| 5. 1.56 × 9 = | 1.404 | 14.04 | 140.4 |
| 6. 0.28 × 48 = | 0.1344 | 1.344 | 13.44 |
| 7. 2.4 × 1.5 = | 0.36 | 3.6 | 36 |

Solve Problems 8–11 and show your work.

8. 84 × 0.25 =

9. 6.4 × 6.5 =

10. 93 × 0.08 =

11. 1.3 × 1.05 =

12. A fourth grader asks you how to multiply when some of the numbers are decimals. What would you say? Write a rule or strategy.





▲ **Student Activity Book, Unit 6, p. 73; Resource Masters, C76**

## 1 ACTIVITY

# Decimal Multiplication

45 MIN INDIVIDUALS CLASS

Give students five minutes or so to solve the problems on *Student Activity Book* page 72 or C75. Call students back together, ask for the product to each problem, and record the equations on the board.

1. 24 × $16 = $384.00

2. 24 × $1.60 = $38.40

3. 24 × $0.16 = $3.84

Ask students for their responses to Problem 4. Highlight the following ideas. If no student brings up these ideas, do so yourself.

- Each problem is multiplying 24 and 16.
- All the answers contain the digits 3, 8, and 4.
- The placement of the decimal point changes the magnitude of the number.

**Why is the decimal point in a different place each time? Let's think about the relationship between 0.16, 1.6, and 16. 16 is how many times as big as 1.6? 16 is how many times as big as 0.16? Is that the same relationship between the products?**

Accept students' responses, and help students to continue extending their understanding of place value. Emphasize that because 16 is ten times as big as 1.6, the product 384.00 is ten times as big as 38.40. Also, since 16 is 100 times as big as 0.16, the product 384.00 is 100 times as big as 3.84.

Have students complete *Student Activity Book* page 73 or C76.

**Keep thinking about the reasonableness of your answers. Also, start thinking about a rule you could use every time when you multiply decimals to decide where to place the decimal point so that the answer is correct.**

### ONGOING ASSESSMENT: Observing Students at Work

Students use multiplication strategies they already know, and reasoning, to solve multiplication problems with decimal numbers.

- **Do students use reasoning about numbers and multiplication to find the correct product?** (e.g., For Problem 11 on *Student Activity Book* page 73 or C76, are they thinking 1.3 and 1.05 are both close to one, so the product is slightly larger than one?)
- **What multiplication strategies do students use?** Are they able to multiply correctly? Can they keep track of all the parts of the problem? How do they decide where to put the decimal point in their answer?
- **What ideas do students use when they write a rule for multiplying decimals?** Are they thinking about the magnitude of the numbers? Are they counting the decimal places in each factor?

### DIFFERENTIATION: Supporting the Range of Learners

**Intervention** Adjust problems for students who are still developing an understanding of multiplying decimals so that each problem is a whole number times a decimal. (Problem 7: 24 × 1.5, Problem 9: 64 × 6.5, Problem 11: 13 × 1.05)

**ELL** Provide sentence stems for English Language Learners for Problem 12. *First, I* ____. *Next, I* _____. *Finally I* _____ *to get my answer.* Students should also be allowed to answer in their native language.

**Extension** Students needing a challenge should solve each of Problems 8–11 using an array.

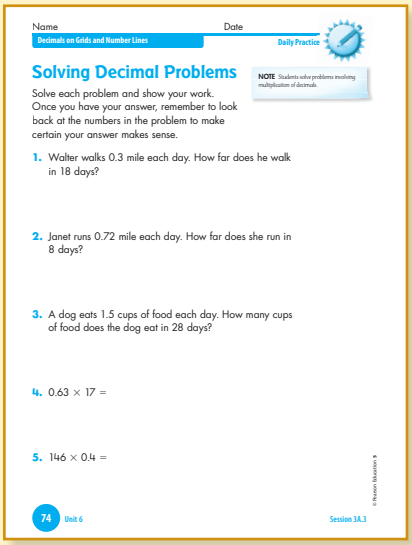
## 2 DISCUSSION
# Writing a Rule

15 MIN CLASS

## Math Focus Points for Discussion

- Multiplying decimals to hundredths through reasoning about place value and multiplication
- Writing a rule for multiplying decimal numbers

Begin the discussion by asking several students to explain their solution to Problem 9 on *Student Activity Book* page 73 or C76. After each student explains his or her answer, ask the class if there are any questions or comments. Student solutions may include the following examples:



Name Date

Decimals on Grids and Number Lines Daily Practice

**Solving Decimal Problems**

**NOTE** Students solve problems involving multiplication of decimals.

Solve each problem and show your work. Once you have your answer, remember to look back at the numbers in the problem to make certain your answer makes sense.

1. Walter walks 0.3 mile each day. How far does he walk in 18 days?
2. Janet runs 0.72 mile each day. How far does she run in 8 days?
3. A dog eats 1.5 cups of food each day. How many cups of food does the dog eat in 28 days?
4. 0.63 × 17 =
5. 146 × 0.4 =



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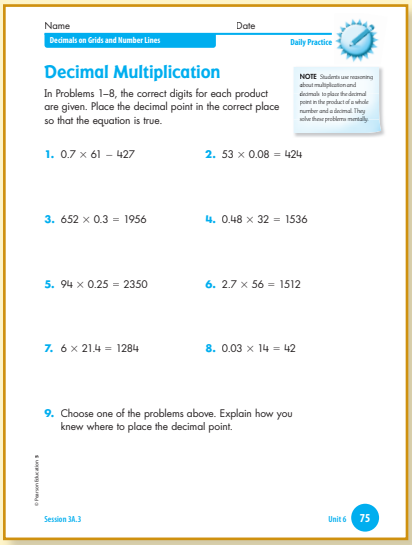
▲ **Student Activity Book, Unit 6, p. 74; Resource Masters, C77**



Name Date

Decimals on Grids and Number Lines Daily Practice

**Decimal Multiplication**

**NOTE** Students use reasoning about multiplication and decimals to place the decimal point in the product of a whole number and a decimal. They solve these problems mentally.

In Problems 1–8, the correct digits for each product are given. Place the decimal point in the correct place so that the equation is true.

1. 0.7 × 61 = 427
2. 53 × 0.08 = 424
3. 652 × 0.3 = 1956
4. 0.48 × 32 = 1536
5. 94 × 0.25 = 2350
6. 2.7 × 56 = 1512
7. 6 × 21.4 = 1284
8. 0.03 × 14 = 42
9. Choose one of the problems above. Explain how you knew where to place the decimal point.



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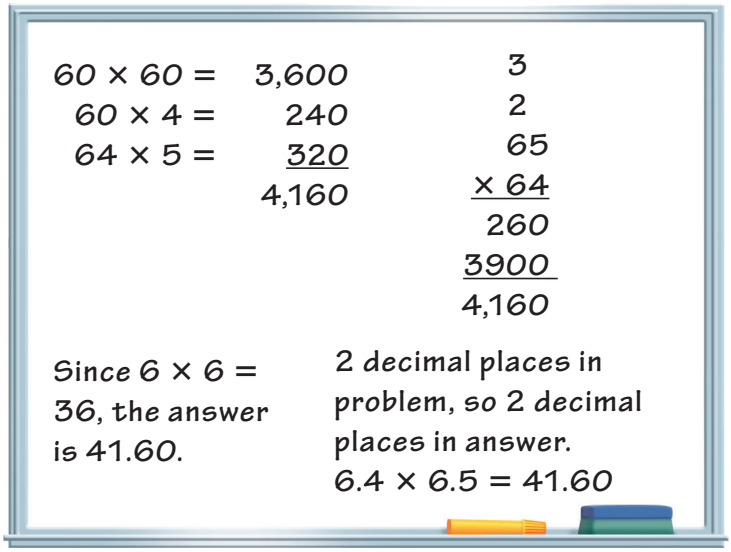
▲ **Student Activity Book, Unit 6, p. 75; Resource Masters, C78**




**You were asked to write a rule for multiplying decimals. We're going to do some more work with these ideas in the next session, but I'm curious what people are thinking. Who's willing to state your rule?**

Students might describe rules that correspond to the examples shown above. Some students will say they multiply the numbers like they are whole numbers, think about the size of the factors, and then place the decimal point so the product is the right size. Others might notice that when they multiply a whole number by a decimal, the answer has the same number of decimal places as the decimal. Or if each of the numbers has one decimal place, then the answer has two decimal places.

After each rule is stated, ask the class to apply the rule (putting the decimal point in the correct position) to this problem:

42 × 36 = 1,512

4.2 × 3.6 =

## 3 SESSION FOLLOW-UP
# Daily Practice

**Daily Practice:** For reinforcement of this unit's content, have students complete *Student Activity Book* page 74 or C77. For ongoing review, have students complete *Student Activity Book* page 75 or C78.

# Multiplying by Powers of 10

Solve the following sets of problems.

| | |
|---|---|
| **1.** $8 \times 0.01 =$ _____<br>$8 \times 0.1 =$ _____<br>$8 \times 1 =$ _____<br>$8 \times 10 =$ _____<br>$8 \times 100 =$ _____ | **2.** $14 \times 0.01 =$ _____<br>$14 \times 0.1 =$ _____<br>$14 \times 1 =$ _____<br>$14 \times 10 =$ _____<br>$14 \times 100 =$ _____ |
| **3.** $25 \times 0.01 =$ _____<br>$25 \times 0.1 =$ _____<br>$25 \times 1 =$ _____<br>$25 \times 10 =$ _____<br>$25 \times 100 =$ _____ | **4.** $138 \times 0.01 =$ _____<br>$138 \times 0.1 =$ _____<br>$138 \times 1 =$ _____<br>$138 \times 10 =$ _____<br>$138 \times 100 =$ _____ |

**5.** Look at the sets of problems above. Write three statements about what you notice, including any patterns you might see.

# Money and Powers of 10

**NOTE** Students solve multiplication problems involving decimals and powers of 10.

Charles is a cashier. When he was cashing out one day, he noticed something strange. All of the money in his cash register was either pennies, dimes, $1 bills, $10 bills, or $100 bills! He also noticed there was the exact same number of each. This happened 3 days in row.

**1.** Complete the table below. Write equations for Day 2 and Day 3. Then find the products. As you work, think about what patterns you notice.

| | **Day 1: 6 of each** | **Day 2: 18 of each** | **Day 3: 125 of each** |
|---|---|---|---|
| **Bills or Coins** | **Equation and Product** | **Equation and Product** | **Equation and Product** |
| $100 bills | $6 \times 100 =$ | $18 \times 100 =$ | |
| $10 bills | $6 \times 10 =$ | | |
| $1 bills | $6 \times 1 =$ | | |
| Dimes | $6 \times 0.1 =$ | | |
| Pennies | $6 \times 0.01 =$ | | |

**2.** Look at the products in the table. What pattern(s) do you notice?

# Multiplying Decimals

In Problems 1–3, circle the correct answer and explain your thinking.

**1.** $19 \times 0.5 =$ 0.95 9.5 95

**2.** $2.5 \times 7 =$ 0.175 1.75 17.5

**3.** $120 \times 0.3 =$ 3.6 36 360

Solve Problems 4–9 and show your work. Use estimation and number sense to determine the magnitude (size) of the answer.

**4.** Yumiko ran 0.35 mile a day for 9 days. How far did she run in 9 days?

**5.** A marathon is 26.2 miles. How far did Benito run if he completed 3 marathons?

**6.** $0.8 \times 12 =$

**7.** $4.3 \times 4 =$

**8.** $185 \times 0.4 =$

**9.** $0.7 \times 8.4 =$

**10.** Look at your work. How is multiplying with decimal numbers the same as, or different from, multiplying with whole numbers?

# Reasoning About Decimals

**NOTE** Students use reasoning about multiplication and decimals to choose the correct product among a choice of three possibilities. They solve these problems mentally.

Circle the correct answer and explain your thinking.

**1.** $0.5 \times 45 =$ 2.25 22.5 225

**2.** $92 \times 0.07 =$ 6.44 64.4 644

**3.** $0.6 \times 248 =$ 1.488 14.88 148.8

**4.** $0.38 \times 19 =$ 0.722 7.22 72.2

**5.** $68 \times 0.24 =$ 16.32 163.2 1,632

# Powers of 10 and Multiplication

**NOTE** Students solve multiplication problems involving powers of 10.

In Problems 1–5, write a multiplication equation. Then solve the problem.

**1.** What is the total value of 245 pennies? $ _____

**2.** What is the total value of 245 dimes? $ _____

**3.** What is the total value of 245 one-dollar bills? $ _____

**4.** What is the total value of 245 ten-dollar bills? $ _____

**5.** What is the total value of 245 hundred-dollar bills? $ _____

Solve the following problems.

**6.** $4 \times 100 =$ _____

**7.** $10 \times 16 =$ _____

**8.** $925 \times 0.01 =$ _____

**9.** $84 \times 0.1 =$ _____

**10.** $27 \times 1 =$ _____

**11.** $675 \times 10 =$ _____

**12.** $19 \times 0.1 =$ _____

**13.** $45 \times 0.01 =$ _____

**14.** $0.01 \times 655 =$ _____

**15.** $20 \times 100 =$ _____

**16.** $100 \times 512 =$ _____

**17.** $0.1 \times 384 =$ _____



# More Multiplying Decimals (page 1 of 2)

Solve Problems 1–3 and show your work. Write an equation for each problem.

**1.** Lourdes buys 24 boxes of paper that cost $16.00 each.
What is the total cost?

**2.** Lourdes buys 24 notebooks that cost $1.60 each.
What is the total cost?

**3.** Lourdes buys 24 pencils that cost $0.16 each.
What is the total cost?

**4.** Look at your equations for Problems 1–3.
Write three things you notice.

# More Multiplying Decimals (page 2 of 2)

In Problems 5–7, circle the correct answer and explain your thinking.

**5.** $1.56 \times 9 =$ 1.404 14.04 140.4

**6.** $0.28 \times 48 =$ 0.1344 1.344 13.44

**7.** $2.4 \times 1.5 =$ 0.36 3.6 36

Solve Problems 8–11 and show your work.

**8.** $84 \times 0.25 =$

**9.** $6.4 \times 6.5 =$

**10.** $93 \times 0.08 =$

**11.** $1.3 \times 1.05 =$

**12.** A fourth grader asks you how to multiply when some of the numbers are decimals. What would you say? Write a rule or strategy.

# Solving Decimal Problems

**NOTE** Students solve problems involving multiplication of decimals.

Solve each problem and show your work. Once you have your answer, remember to look back at the numbers in the problem to make certain your answer makes sense.

**1.** Walter walks 0.3 mile each day. How far does he walk in 18 days?

**2.** Janet runs 0.72 mile each day. How far does she run in 8 days?

**3.** A dog eats 1.5 cups of food each day. How many cups of food does the dog eat in 28 days?

**4.** $0.63 \times 17 =$

**5.** $146 \times 0.4 =$



# Decimal Multiplication

In Problems 1–8, the correct digits for each product are given. Place the decimal point in the correct place so that the equation is true.

**NOTE** Students use reasoning about multiplication and decimals to place the decimal point in the product of a whole number and a decimal. They solve these problems mentally.

**1.** $0.7 \times 61 = 427$

**2.** $53 \times 0.08 = 424$

**3.** $652 \times 0.3 = 1956$

**4.** $0.48 \times 32 = 1536$

**5.** $94 \times 0.25 = 2350$

**6.** $2.7 \times 56 = 1512$

**7.** $6 \times 21.4 = 1284$

**8.** $0.03 \times 14 = 42$

**9.** Choose one of the problems above. Explain how you knew where to place the decimal point.

# Animal Speeds

Solve the problems. Show your work.

**1.** If a sea otter swam 5.6 miles per hour for 1.5 hours, how many miles did the sea otter swim?

**2.** If a three-toed sloth moved 0.15 mile per hour for 7 hours, how far did it go?

**3.** If a humpback whale swam 16.8 miles per hour for 4.5 hours, how far did it swim?

**4.** If a garden snail moved 0.03 mile per hour for 3 hours, how far did it get?

**5.** If an American eel swam 2.4 miles per hour for 3.5 hours, how far did it swim?

**6.** If a great white shark swam 24.9 miles per hour for 8 hours, how far did it swim?

# How Far?

**NOTE** Students solve problems involving multiplication of decimals.

Solve the problems. Show your work.

**1.** If a greyhound ran 39.4 miles per hour for 4 hours, how many miles did it run?

**2.** If a bluefin tuna swam 43.5 miles per hour for 7 hours, how many miles did it swim?

**3.** If a California sea lion moved 13.4 miles per hour for 3 hours, how far did it go?

**4.** If a tiger shark swam 19.9 miles per hour for 5 hours, how far did it swim?

**5.** If a spider moved 1.2 miles per hour for 2.5 hours, how far did it go?

**6.** If a striped marlin swam 50.3 miles per hour for 4.5 hours, how far did it swim?

# Multiplication with Decimals

**NOTE** Students solve problems involving multiplication of decimals.

Solve each problem and show your work. Once you have your answer, remember to look back at the numbers in the problem to make certain your answer makes sense.

**1.** $0.6 \times 215 =$

**2.** $57 \times 0.35 =$

**3.** Lourdes rides to and from school each day. The roundtrip distance is 2.6 miles. How far does she ride in 5 days?

**4.** Renaldo runs 0.88 mile each day. How far does he run in 7 days?

**5.** A cat eats 1.5 cans of cat food each day. How many cans of cat food does the cat eat in 14 days?

